

# MICHIGAN FARMER.

Devoted to Agriculture, Horticulture and Science.

Organ of the State Agricultural Society—the only Agricultural Journal in Michigan.

Established in 1843.

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## THE MICHIGAN FARMER,

A MONTHLY HOME JOURNAL

Devoted to Agriculture, Horticulture, Stock-Raising Mechanics, and all things pertaining to the Farming Interests of Michigan, and Agriculture in general. \$1 per year.

WILLIAM S. BOND, GEORGE SNYDER,  
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trees of the most reliable kinds, and of men of known horti-  
cultural experience, should send for a catalogue of ELLWANG-  
& BARRY, of the Mt. Hope Nurseries, Rochester, New York,  
they issue four, No. 1 Fruits, No. 2 Ornamental Trees and  
Shrubs, No. 3 Flowers, No. 4 Trade List. Whatever they  
forward from their nurseries is just what it is represented to  
be, and with proper treatment will remain to your household  
as the fruit of your foresight and industry hereafter.

### A WELL DESERVED HONOR.

The American Institute, of New York, have forwarded to our friend T. T. LYON, Esq., three beautiful medals as premiums upon his exhibition of Michigan fruit. They are splendid and massive specimens of workmanship, enclosed in beautiful cases lined with velvet and satin, and the sizes adapted to their reception. On one side is the seal of the institute, on the other the following:

- 1 Gold medal—"An award to T. T. Lyon, for the best collection of Apples—1863."
- 1 Silver medal—"An award to T. T. Lyon, for 30 named varieties of Table Apples—1863."
- 1 Bronze medal—"An award to T. T. Lyon, for 12 named varieties of Table Apples—1863."

We congratulate Mr. Lyon on his success in the exhibition, where he was obliged to compete with some of the best horticulturists in the United States, and he deserves the thanks of every fruit grower in Michigan, for his indefatigable and successful efforts towards placing the fruits of this State in the position they should properly maintain abroad. Already have its influences been felt, and eastern agents are now scattered throughout our fruit regions contracting for the coming crop. Every farmer should have a good selection of fruits upon his lands. No soil and climate is more capable of raising fruit than is central and southern Michigan.—W. S. B.

### An Extraordinary Helper—Beat It Who Can!

William Whitfield, of Waterford, Oakland Co., sold some of his very choice fat cattle to Smith the Marine butcher, about a week ago. Amongst them was a two year old heifer, that is to say she would have been three years old some time in May next, had Smith's ardent desire to grace his stall with choice beef during the Easter markets, not prevented her from ever attaining fully to that age. This heifer weighed on foot before she was killed, 1371 pounds, and she dressed and yielded 800 pounds of beef and 175 pounds of rough tallow, and the hide 70 pounds. Making in all 1045 pounds or a yield of 76 pounds per 100 of live weight, and showing only 24 pounds of offal. If there be any feeder or trader in this State or any other that can beat those figures on

age and quality, we should like to hear from them.

The Messrs. Heath, the well known drovers have sold to Mr. Smith the premium fat cattle that took the first prize at the Kalamazoo State Fair. Those bullocks brought \$200 per head, and when dressed yielded 1600 pounds of beef in the quarters.

For the Michigan Farmer.

APRIL.

**Suggestions for the Month.**

"Now in her green mantle blithe nature arrays."

Farming is generally regarded as a dull business by those who are engaged in it, and very unluckily, in most cases they are right. To him whose body and mind is totally absorbed in the dull routine of daily labor, whose bone and muscle performed the unpleasant operation of ten hours labor between the rising and setting of every sun, whose busy life has no room for pleasure or recreation, and whose associations are such only as his business has necessarily introduced, adding a few families of neighbors and relations, farming can not but be regarded as a dull business. The enlivening spring that arouses vegetation and sends a frolicsome spirit into animal life is wasted upon him. Like the good old faithful pendulum, he is calculating the number of times he must "tick" during the coming season, and the result is so large, that, like the pendulum, he is overcome with the bare idea of such overwhelming numbers, and feel like stopping altogether. Who blames him for feeling disturbed under the circumstances? I don't, do you? I do, responds the pert-master of a yard stick. He is the most independent man in the world! Ah, ha, and is he not though? retorts the sleek disciple of Sir William Blackstone. He is though, chimes in the man with the saddle bags, and so it is echoed back and forth, and even in high places, until the worn-out sound reaches the poor subject, whom it finds delving and digging in obscurity for a scanty substance. Merchants, lawyers, doctors, or whoever you are, there is a time coming when that chest full of dollars which you have gained by your *wit*, and upon which you are now so complacently perched, owning the smaller fry below, and passing these obsequious compliments upon those who have unwittingly furnished you with your gay feathers, for the sake of flattering their vanity, that they may lead you more, will someday send a damp chill through your pampered bodies. Mammon you have served, and Mammon will doubtless reward you. This is my suggestion for the month of April for you, and if you do not chance to suit until the first of May or June it will apply as well. And now, brother

farmers admitting that your lot is a hard one, and your associations insufficient and unpleasant, let us see if we can not offer something agreeable to you.

You have of course planned before this, most of the contemplated work for the season. Have you committed those plans to paper? If not, buy a suitable blank book, and do so it once, then figure up carefully the amount of expense involved, and the probable result to be obtained from each operation, and if there are any that do not leave a margin on your side, abandon them, there are plenty that will leave a margin. If you have not now the means, or help, sufficient to execute all your plans, let a part go by the board altogether, and not half execute the whole. Do not depend upon exigencies for anything but the operations of nature. Keep an account of at least the principle items of your business. Book-keeping is one of the necessary elements in conducting any business intelligently, and correct agriculture absolutely requires it. Now is the time to open an account with your spring crops, orchard, garden, poultry yard, &c. Do not raise too much of any one kind of crop, but divide them up, fifteen acres of corn, ten acres of oats, five acres of barley, two acres of potatoes, three acres of buckwheat, an acre of flax, an acre of beans, two acres of peas, an acre of turnip or a mixture of roots, are preferable to forty acres of corn, and the variety of labor in attending them is much more pleasant than continually oscillating backward and forward with the horse and cultivator between rows of corn the whole season. Plant nothing but the best varieties of seed. "Like will produce like," and nubbins will produce nubbins. If any one asks an argument to prove that, we have nothing more to offer him, and the previous remarks may be considered withdrawn. Manures, remember manure is the food of plants, and if you want a good healthy growth, and a well filled ear, fail not to supply the food. If the supply is short use economy, one bushel distributed in the hills, is worth for the present crop, three times as much as if sown broadcast. Try a little coarse unrotted barnyard manure as a top dressing, and note the result.—This mode of applying manure is making us some able advocates now a days.

*Live stock* should be the subjects of constant care. They repay slight attentions the same as individuals. They cannot be expected to "laugh and be fat," without they are kept in good humor. A change of pasture occasionally from good to better, a reasonable allowance of salt as often as once a week, and an abundant supply of fresh water daily, will keep them merry. They should be well kept during the present month, as hard

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wintered cattle will become very weak during the first warm days of spring.

Look to the poultry, good breeds are better than poor ones, and are easily procured. Early chickens are more profitable than late ones. Don't rely upon their picking their living too soon.

*Orchard*—Do not try to cheat your fruit trees. Give them a plentiful supply of manure about the roots, and remember the roots extend over as large a surface as the top. Cultivate a hoed crop in it, and nothing but a hoed crop. Keep the hills away from the trees. Have an eye to cultivating the orchard more than the crop.—Give the trees a good washing with lye.

*Garden*—I do not say kitchen garden for generally in the country, a garden is a garden. This subject needs a chapter by itself. Farmers are always harping about the high life of city people. Could they but be introduced to the exquisite discussions, that the most exquisite city society hold daily over the exquisite products of the garden, they would talk less and attend more to the cultivating of that neglected and untidy looking square rod of ground at home. Do not sow seeds too early in open beds. A good way to start early plants, is to plant the seed in little square pieces of inverted sod placed on the south side of some building, and protected from frost nights, and on cold days. When the proper time arrives transfer the sods, with the young plants in them, to the place where they are intended to grow, you thus avoid disturbing the young roots. We will give a list of vegetables that make a very agreeable variety for a farmer's garden. Onions, radishes, parsnips, cabbages, cauliflowers, beets, carrots, calery, cucumbers, letters, watermelons, muskmelons, squashes, salsify, tomatoes, beans, peas, chicory, sweet corn, parsley, asparagus, rhubarb, egg-plant, sweet herbs, and strawberries. None of the above named vegetables are superfluous, and most of them come decidedly handy in preparing healthy and palatable meals during the hot days of summer. Live well, and dress well, if you wish to get on in the world.

In conclusion let me say to farmers, keep *ticksing*. We have done a great deal of good, and may accomplish much more, you that feel discouraged, that you are the oppressed of all oppressors, remember,

"The poor oppressed honest men, had surely ne'er been born,  
Was there not some compense to comfort those that mourn."

Ind., March, 1864.

E. W.

**SMALL FRUITS.**—The Rev. Mr. J. KNOX, of Pittsburgh, Penn, one of the most extensive and successful cultivators of the Grape and Strawberry in this country, is now ready to supply the best and most approved varieties and will forward his new catalogue with descriptions of varieties, modes of culture &c, to any applicant enclosing a stamp.

to a deadlock of no issue For the Michigan Farmer.  
**STARTING SEEDS AND SETTING POSTS.**

MESSRS. EDITORS:—As the season is now at hand to prepare hot beds—set posts, &c., &c. I am induced to send you a few tests of experiments proved worthy of being adopted. Desirous of remedying some disadvantages attendant upon hot bed plants, I hit upon the following method:

I took turnips about the size of a tea cup, cut off the crown low enough to have a space inside the rind as large around as a (I was going to say a silver dollar, but it is long since many of us have seen one to be able to form in our minds but a vague idea of things that once were,) hence I'll say the bottom rim of said tea cup; cut out the stem the size of a new cent, gouge out the meat with a narrow blade knife. To finish off, with a round end case knife scrap to the rind, fill the cavity thus formed not quite full of rich mould, put in two or three seeds you wish to propagate, cover lightly with fine sand and set in hot bed. Be careful to leave at top a space that will hold sufficient water to moisten to the bottom of mould in the turnip shell or rind, which should be strictly attended to, as evaporation goes on very rapidly. When the weather becomes favorable for open growth and the plants well started, prepare your ground, make an excavation when you wish to set the plants, which should be left open a few hours for the sun to warm, set the turnips with the plants as taken from hot bed, so as the top will be level with the surface when the earth is drawn around them. The turnip rind will soon rot and make rich substance for the extending roots to revel in, nip off only surplus number of plants you may have started.

By picking out plants from the hot bed you necessarily check more or less their growth, consequently weaken their vitality and if the weather should happen to prove unfavorable their growth be retarded at least for a time, if not destroyed, but with the turnips there is no put back by transferring, no interruption and better able to endure untoward circumstances. I found those plants started in turnips at the end of a few weeks further advanced after being removed to the open ground whether favorable or unfavorable condition of weather occurred.

Years ago my attention was called to the effects of wood ashes applied to posts set in the ground. A neighbor had enclosed a yard around his house with white oak posts, at a convenient place in the yard he erected a leach tub, when renewing the old ashes were thrown against the fence, at the expiration of nine years all the posts were rotted off, except those in contact with the ashes, which were perfectly sound and allowed to remain when the rest of the yard fence was reset.

about which time I had occasion to inclose a lot and circumstances induced me to use pine scutlings for posts. I left on one side of the inclosure the holes not filled by six inches, but careful to secure the lower end of posts firmly, (which is all important to keep the top in proper place.) I then filled the holes with ashes and some inches above the surface. Four years after, those posts that I ashed were quite sound and firm, all those that I did not ash were entirely rotted at surface of the ground, since which I lost all knowledge of the premises.

Again, seven years ago, I set four white oak posts for clothes line, by way of again testing the effect of ashes. I put them around three of the posts. This winter after the usual order of a washing, my better half was contemplating with pride and satisfaction, the milky whiteness of her achievement as they waved in a gentle breeze, when lo and behold down came the unashed post, consigning many of the articles in their new born purity to the embrace of dirty mother earth.—The others quite sound.

I intended to give quite a batch of odds and ends but find that I have occupied so much space I'll defer more at present. Yours, &c.,

PRO BONO PUBLICO.

P. S.—Seeds may be dropped in hot bed between the spaces formed by shape of the turnips, and when the turnips are removed the seeds may be left germinating. Very many persons do not prepare hot beds, in which case the young members may prepare a few turnips, set them in a box and place it in a south window and in that way propagate some early vegetables.

#### A CORRECTION.

CHICAGO, Ill., Feb. 22, 1864.

EDITORS MICHIGAN FARMER:—There has been floating around the papers a statement that a Mr. Riggs, of Nebraska, had obtained a patent for a new method of separating the sugar from Sorgho Syrup, and that he had demonstrated the practicability of the discovery by taking samples of syrup at the Department of Agriculture in Washington, and in a few moments producing sugar in every respect equal to the best coffee sugar.

From the same statement made to me by the individual, I stated it at the recent Agricultural Convention at Ypsilanti. Since that time I have learned that the statement needs some qualification, and I take this method to correct any error I may have led the persons present into.

Mr. Riggs does not take any kind of syrup and produce the sugar from it, it is only in the "mush state" that he operates upon it, and at the recent Sorgho Convention at Madison, Wis., there was but one sample on which he would operate

at all, and that was a sample of very well ground "mush syrup," made in Morgan county, Ill. With such samples he succeeds well, and probably deserves credit for his investigation. But it should be understood that it is only where the sugar is already formed that his process comes in play to separate it from the syrup. I would not wish to detract from what he has done, nor would I wish to see the people lead to embrace an error to their pecuniary loss.

H. D. EMERY.

For the Michigan Farmer.  
The Late Meeting of the State Agricultural Society.

MARSHALL, Feb. 1864.

MESSRS. EDITORS:—I regretted exceedingly that protracted and painful indisposition prevented my attendance at the late meeting of the State Agricultural Society at Ypsilanti. Judging from the interesting report of the proceedings in the Detroit *Free Press*, those of our farmers who were present, were well repaid for their attendance.—The society under its improved financial condition has entered upon a sphere of usefulness that promises the most beneficial results. Their annual winter meetings are admirably calculated to advance the agricultural interests of our State, more effectually, if I mistake not, than the holding of the Annual Fairs as they have heretofore been conducted. The suggestions in the interesting and able report of the Secretary will I trust receive a hearty and general approval. If fully carried out, the benefits to be derived from these annual exhibitions would be greatly enhanced.—The very important question asked Mr. Howard, at the close of his remarks, "on stock raising and the comparative value of breeds of cattle," what breed gave the greatest amount of beef to a given quantity of food, is one of deep interest to every stock grower. I hope it may in due time be satisfactorily answered in accordance with his suggestions, by a series of carefully conducted experiments at the Agricultural College under the direction of the State Agricultural Society. The late purchase for the college of first class animals of two breeds the Durhams and Devons, will soon enable this question to be solved so far as their crosses with our native cattle are concerned.

Notwithstanding the persistent opposition from certain quarters to our agricultural college, I still indulge the most sanguine hopes of its ultimate success. Perhaps in no way at present can it better subserve our immediate agricultural interests, than by a series of experiments, having a direct bearing upon successful agricultural practice.—The valuable results of these experiments, which are hereafter to form a part of the practical education of the college, in connection with the

admirable system of instructions now in operation, cannot fail to secure for it the hearty and generous support of every intelligent farmer in the State. The time I trust has now passed by when the farmers of Michigan will begrudge the mere pittance in appropriations that may be required from time to time to place their own institutions, the Farmers College in a firm and enduring basis.

W. M. R. SCHUYLER.

### REPORT ON HALF AN ACRE OF RUTABAGAS.

MARSHALL, Dec. 22, 1863.

To the Executive Committee of the State Agricultural Society:

The undersigned would ask leave to report:

1st. The extent of area of lot which was 3 by 16 rods.

2d. Condition of soil, green sward turned over the first of May, the same time of plowing for corn. The ground dragged and then rolled with heavy roller wheel cultivator, and left in that state until you can see weeds or grass start, and then cultivated it again the other way. I then left it until the first day of July, and cultivated again both ways, rolled it again and then marked it after the roller with a light hand marker (making five marks, one running in last mark made, the whole thing very light with shoes on each leg like a sleigh, making a light mark and this done no faster than the drilling was done.)

3d. The seed was sown in rows two feet six inches apart; six ounces of seed to half an acre, sown with a wheel-barrow drill, (maker not known.)

4th. The period of thinning was when the tops were all formed, and the bottoms had began to swell a little, (no hoeing done nor will any be needed if directions are followed.) Thinning out a foot apart, one day's work, and cultivating three times one and one-half day with horse. The outside teeth to cultivator of the form of a mould board to plow, throwing the earth away from plant each time; the first time very lightly; the second time a little more, and the third time still more which relieves the root from the pressure of the earth. The first time of cultivating should be done as soon as the rows can be seen and not disturb the plant; the second time so as to keep all weeds down, and the third time when the leaves are full grown, the cultivator running under them close to the plant.

5th. The crop was measured in a half bushel, there was (219) two hundred and nineteen bushels on the one half acre.

6th. The method of securing the crop is: cut the tops off with a sharp hoe, having the tops of two rows fall together, and then with a fork

gather them in piles; then use a potatoe hook to pull the roots, pulling four rows in a winrow on piles if you please; always seeking a dry time to pull them, and the dirt mostly falls from the roots. The rutabagas were thrown from half bushel into a basket and the basket given a shake or two, and then thrown into three boxes fixed on a wagon (to dump manure), and from these boxes dumped on a riddle so as to sift all dirt as they rolled in to the barn cellar window, which leaves the roots clean enough for use. I endeavour to keep them as cold as may be and not freeze in cellar. To cattle that run in yard I throw them out whole, they are thankful for them. For fattening cattle or milch cows I cut them; horses eat them with a relish when thrown in their manger whole.

E. T. GREGG.

STATE OF MICHIGAN, }  
                            } ss.  
CALHOUN COUNTY,     }

Darius Smith, being duly sworn says, he is a Surveyor, that he surveyed with chain the land on which E. T. Gregg raised a crop of rutabagas the past season, and the land was in one contiguous piece, and the quantity is one half acre and no more.

Sworn to before me, this 8th day December, 1863,

E. H. LAWRENCE,  
Justice of the Peace, for  
Calhoun County, Mich.

STATE OF MICHIGAN, }  
                            } ss.  
CALHOUN COUNTY,     }

E. T. Gregg, being duly sworn says, that he raised a crop of rutabagas the past season upon the land surveyed by D. Smith, and that the quantity of roots raised thereon was two hundred and nineteen bushels, measured in a half bushel, and that the annexed statement subscribed by deponent, as to the manner of cultivation, expense, &c., is in all respects true, to the best of his knowledge and belief.

E. T. GREGG.

Subscribed and sworn to before on the 24th day of December, A. D. 1863.

F. W. SHEARMAN,  
Justice of the Peace.

### WANTED A DITCHING PLOW.

FAIRFIELD, March 1, 1864.

MESSRS. EDITORS: Is there a reliable ditching plow in the market, one that is suitable for making ditch for tile? If so, who has it for sale and what is the price?

On many soils underdraining is a necessity and is felt to be so by many farmers, but the scarcity of labor is a serious drawback on improvements of this kind, but if labor could be obtained, to throw the dirt out with a spade is too slow a pro-

cess for this fast age. Hence the demand for machinery; if there is no reliable machine in market for making tile drain ditch, the man who can invent one will not only be a public benefactor, but will make his fortune besides.

C. QUICK.

### THE CULTURE OF CRANBERRIES.

A communication from

WM. HUNTINGTON, OF HOWELL, MICH.

HOWELL, February 5th, 1864.

To the Michigan State Agricultural Society:

I have received your circular inviting me to be present at the meeting of the Michigan State Agricultural Society at Ypsilanti, commencing on the 9th of this month, and have to say that I should be happy to attend said meeting if circumstances would permit. Notwithstanding the fact that I am not engaged to any very great extent in agricultural pursuits, being myself a Physician, yet I feel an interest in the agriculture of this State, and would most cheerfully do whatever I could to advance its general interest. But not being able to attend in person I take the liberty to address you a letter with the request that it be read before the society on Tuesday evening that being the time for discussion on fruit culture in Michigan. I have chosen for my topic the culture of cranberries.

Much has been said upon this subject, and I am sorry to say to very little purpose, a large portion of what has been published in regard to it being directly calculated to mislead those who feel inclined to turn their attention in that direction.—For instance we see it after stated that this cranberry requires no vegetable mould, but that pure white sand and a plenty of water are all is required to adapt any locality to the growth of cranberries. But this is not so, at least such conclusions are not favored by the results of my experiments during the last ten years. It is true, that cranberries will grow where grass will not, and where scarcely any other plant will, and it is equally true that some animals will thrive where every other kind of animal would starve, but this is not saying that such animals live without food, neither is such the fact, where any animal thrives and multiplies most abundantly there that food upon which he subsists exists in greatest abundance, and the same is true in regard to plants whether we can detect that particular kind of food or not by any means which we possess. But without attempting to theorize further I will merely state the results of my experiments during the last ten years as briefly as the subject will admit of.

In the fall of 1853 I selected for experiment a piece of grass covered marsh. I caused it to be

covered with sand to the depth of 4 or 5 inches, and set out my vines the same fall. The marsh was a very wet spongy marsh with a ditch running through the center. The experiment was not an entire failure so far as the growth of the vines was concerned, but it was nearly so. It soon became evident that the place was not exactly adapted to that kind of culture, the vines did not thrive as well as they did in their original locality. They grew the best at the border of the marsh where there was no muck underneath.—Grass and weeds soon began to trouble, and they required weeding as often as once in three or four weeks during the entire summer, and it soon became a question with me whether the thing would pay in the end. But the second year I sold my farm, and the purchaser allowed cattle to run over the vines and they were soon destroyed, leaving it still a question whether they could be cultivated with profit in that locality; upon the whole I think not.

Subsequently I came into possession of the same farm again, and again determined to try the cranberry culture. But this time I selected a spruce swamp containing some 35 acres. This swamp had been drained several years before by putting a ditch through the center, it was a very spongy swamp, so much so that in the dryest of weather it required good boots to protect the feet, notwithstanding there was no water on the surface and the swamp was drained. This time I took off the surface to the depth of some four inches, throwing it into piles and set my vines in the muck underneath. Here I had a chance to see whether they could live on water or water and sand or not. I covered a small place with sand and left the rest bare, the vines soon commenced growing very finely near the ditch where the muck was the driest, but less so back from the ditch where the muck was more wet and less decomposed; but where it was covered with sand they did just nothing at all comparatively. The muck in this swamp is not enough decomposed to produce grass of any kind. But where it was covered with sand beds I scattered grass seed and though the vines would not grow, yet red top did sparingly. But where there was no sand the vines grew very nicely near the ditch, but not as well at a distance from it. This I attributed to a want of decomposition sufficient to nourish the plant, it certainly was not for the want of water. Taking this view of it I began to look for a fertilizer. I first tried lime but though it killed all the moss it came in contact with, it did the vines no good. I then tried ashes and in this I was successful. The effect of plaster on clover bears no comparison with the effect of ashes in this particular case on cranberry vines.

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Last year I sowed after the rate of 60 bushels to the acres on a part of my vines, and the effect was truly wonderful. In this case the muck is not sufficiently decomposed to suit the vine without the ashes, or else the potash is the proper fertilizer for cranberries. I intend to sow freely next spring 60 or 70 bushels per acre just before the vines blossom. My vines bore finely—those that had been set long enough to bear last season. It requires about four years for them to get to bearing fully. On the kind of soil here described the best way to fit it for the vines is to turn it over to the depth of 10 or 12 inches, this is best done by cutting it into squares of some 12 or 15 inches with a hay or ditching knife, and then with a spade turn it over, turning over some 5 inches of the surface first and then the other 5 or 6 inches in depth should be laid on to that in such a manner as to break joints, the same as laying shingles for roofing, when done in this way everything is turned under leaving the surface clear from moss, &c.

With this kind of procedure upon the kind of marsh I have described, cranberries can be cultivated very profitably. Like all other kinds of fruit, cranberries are liable to be destroyed by its natural enemy. The fruit worm is often very destructive and I know of no way to prevent its ravages. If any one does, they will oblige me by giving me their manner of doing it. I had only 1-4 of an acre in bearing last season, and I am satisfied that but for this worm I should have had 50 bushels, but as it was I had but 6 1-2 bushels. As it regards the necessity for flowing during the winter I am not prepared to say from experience, my opinion is, however, that depends upon the degree of decomposition of the muck, if it is not sufficiently decomposed flowing injures them.—But if there is danger that it will become too much so, flowing prevents it. The most productive variety is without doubt the Black Bell. But it is difficult to get any great supply of plants of that variety, as it is not very often found unmixed with other varieties. The cherry shaped probably ranks next to the Bell.

#### How to get a Great Crop of Potatoes.

When any of my neighbors raise better crops or get them with less labor than I can, I am apt to want to know how they do it. On the other hand, if they have extravagant theories, do a great deal of extra work on their land, fuss a great deal with composting manures, and thoroughly pulverizing the land, and still do not show any better crops than their neighbors. I am not particularly inquisitive to know or practice their theories.

Happening, a few days ago, to be in the cellar of Capt. S. Hayden, of Hollis, I noticed his bins of splendid potatoes, and had the curiosity to en-

quire how he raised them. He told me that on ground plowed in the spring he furrowed as deep as he could without turning up the turf. He prepared his manure by putting in the green manure some loam, ashes and brine or salt not very strong. He cut his potatoes so that one as large as a hen's egg would be divided into three or four pieces, and put three pieces in a hill, the skin side up, in a triangle of about five or six inches apart. He then put a shovel full of manure on the top of the potatoes. The result was that his potatoes yielded at the rate of from eight to ten hills to the bushel of good market potatoes. He told me he took good sized potatoes to plant. The potatoes he raised were large enough—would average as large as turkey's eggs. I shall try it, and if any of your readers would like to do the same, you may give them a chance.—*New England Farmer.*

#### HOW CAN THE STATE AGRICULTURAL SOCIETY BEST ACCOMPLISH ITS OBJECT FOR WHICH IT WAS ESTABLISHED BY ITS EXHIBITIONS?

A communication from  
S. S. BAILEY, OF GRAND RAPIDS, MICH.

By making these exhibitions a greater source of information to the people of the State.

How can this be done?

By collecting, from the persons exhibiting at our Annual Fairs, statements in regard to the extent of their business. Let the person who shows blooded cattle furnish a statement to the society in regard to his cattle, the number he has on hand, the ages, sexes and what number for sale. The person who exhibits horses, let him also give such information as may be thought useful to the State at large. So also of all animals.

The exhibition of manufactured articles, such as tools and implements for the farm. All machines used by farmers in harvesting and preparing grain for market. Articles of furniture, clothing, leather, carriages and buggies, stoves, hollow ware, &c. Musical instruments, sewing machines, clocks, jewelry, &c. Let every one make statements of the amount and extent of their business. The amount of capital invested, their prospective business for the succeeding year, &c. So also with the exhibitor of fruit, nursery stock, &c. In short let every person exhibiting at our annual fairs furnish the society with such information, about the animals or articles they may exhibit, as will be useful to the people of the State, and show the resources of the State to supply the home demand.

By so doing a greater number of exhibitors will be drawn together, and consequently a greater number of people, a greater interest will be created in our Fairs. The people will know who has articles and animals for sale, and who has not and where to go and find them, and I think a gen-

eral and greater interest will spring up about our Annual Fairs. Every person exhibiting will by this arrangement receive the benefit of an advertisement, whether he receives a premium or not, for which he will be willing to pay more or less depending on the nature and extent of his business.

The question is further answered by saying, let this information be collected, and these advertisements be properly arranged by the secretary and published with the award of premiums in a small pamphlet. Let a small fee be charged to cover expenses. Persons exhibiting will at the time of the fair subscribe and pay for a large number of these pamphlets, and those furnishing advertisements will pay liberally for their advertisements. People attending the fairs will also be glad to purchase for future reference, and those not able to attend will be glad to get such information as these pamphlets will give. I think the sales of these pamphlets will more than pay the cost.

So arrange the rules and regulations as to make it almost imperative on those exhibiting, to furnish this information. By a little engineering I think those who would desire to advertise in such a pamphlet, would almost pay the whole cost.— Those from abroad exhibiting would pay liberally. I know that what I have proposed is something new and untried, but it looks possible, practicable and beneficial, and I think it worthy of an experiment. The executive committee may think differently. I submit these suggestions for your consideration, your good sense will correct errors and supply deficiencies, and should you see fit to make the experiment, please compare opinions and arrange details.

#### Cultivation of Winter and Spring Barley.

James K. Smith, of Kent county, Canada West, furnishes the *Genesee Farmer* with his views respecting the cultivation of barley. There is nothing new in his suggestions, but as experience has proved the wisdom of some of them, a republication may be beneficial, especially to such of our readers as may have but little experience in the cultivation of a crop that is too often a failure. The writer says:

The soil best adapted to the growth of barley is a light clay loam. Large crops can be grown on stiff clay soils when they are rightly cultivated. Winter barley may be sown on land that has been well summer fallowed. The soil should be well pulverized before the seed is sown. Bones and farmyard manure containing nitrogen are the best kind to use. When beans are planted, after a clover sod, barley would do well after the bean crop. The bare ground should be plowed twice before the seed is sown, should be about the middle of September. Two bushels of seed to the acre is sufficient.

#### CULTIVATION.

Spring barley should be sown after corn, beans, or turnips. The land should be prepared by ploughing it in the fall, as the frost in winter pulverizes it and makes it more easily worked. Clay soils are most benefited by fall plowing. The land should either be plowed again in the spring or well cultivated. The seed should be sown as the ground is in suitable order and the weather will permit. Sub-soiling would be beneficial. It

would keep the land more moist. Barley requires a moist soil, as it often suffers from drouth. After the seed has been sown the land should be rolled. It helps to keep the land moist and warm, and makes the seed come up quicker and more evenly.

#### HARVESTING.

If barley is not cut before it is ripe, it can be bound up at once. If it is not ripe it is better to lie in the swath for a day or two. The sample is often spoiled by heavy rains after it is cut, which makes it of a dark color.

**Nature's Bee Book.**—We have received from Prof. W. A. Flanders, the man who at the last State Fair allowed swarms of bees to alight on his head, took them in his hand, threw them among the crowd, and even put them in his mouth, with impunity, his text book on Bee keeping. It is a very interesting little volume for any person who is engaged in Bee culture. Price 25 cts., address Shelby, Ohio. We give the following extract on

#### April Management.

Should your bees yet remain in winter quarters, this is the month that they should be set out in the summer residence. The willow now will afford them labor, from which they collect their "bee bread." A few stocks should only be set out at one time, as they be required to settle in their right hives.

Those that are deficient in "bee bread" can be supplied with a composition of the yolks of eggs (hard boiled) and unbolted rye or buckwheat flour, mixed with a little honey.

This is an excellent preparation for bees in spring. It infuses vigor and strength into the queen, and causes her to lay rapidly. All communications above the hives should now be closed, to assist early breeding and keep the bees out of the caps.

**How to Make Good Cheese.**—This is not generally known in Michigan, as we ourselves can testify after an experience of twelve years, and that there is no use of sending a mass of pressed *cheese* into market and naming it "cheese," as buyers soon discover the fraud, and it will "dry up" on the dealers hands. We do not think, that our farmers fully understand the importance of a uniform rule in cooling and heating the milk, scalding the curd, &c., without this properly done cheese making is a failure, and to remedy this evil they should procure Boe & Blain, patent premium Cheese Vat, from Madison, Ohio, which is said by those who have used it, to be the best cheese-making apparatus now known.

**Importance of Good Cooking.**—It is a well known medical fact good that cooking will promote health and add to the comfort of a family. Nothing is more pleasant than the odor of well prepared food, as we take our places at a table, and a man is never in better temper than at a well cooked dinner, (wives having cross grained husbands should remember this and tickle their palates for them when they are about to ask a favor,) it is well therefore that every woman should learn the art of good cooking in all its branches; this can be easily done by purchasing one of the best books ever published on this subject by D. D. APPLETON & Co., of New York, it is by Mrs. M. F. Haskell, and should be in every family in the land.

**A Fit Use for Tobacco.**—Many judge that it should be chewed, smoked or snuffed, but we believe that nature intended it for a better and more fitting purpose. All have no discovered this fact, as many a good house keeper and insurance company is aware of, but Mr. JAMES F. LEVIN, of Boston, Mass., now has it in a good form of Pure Extract of Tobacco for curing sea on sheep and killing ticks, and all kinds of insects and vermin which infest a farmer's premises. One pound of this extract at 75 cents, will make 10 gallons of wash, which will kill insects or cure the diseases designated. Let every man who uses it in his mouth or nose, give his animals a dose when needed for their health and comfort.

We give a large space to the Proceedings of the State Agricultural Society this month, as they are very interesting as a matter of reference.

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## REPORTS, LECTURES AND DISCUSSIONS

*At the Winter Meeting of the Michigan State Agricultural Society, held at Ypsilanti, Feb. 9, 10, 11 and 12, 1864.*

On Tuesday morning the President delivered the following

## ADDRESS:

*To the Executive Committee of the Michigan State Agricultural Society:*

In presenting to you a brief exhibit of the transactions of the society for the past year, it affords me much pleasure to be able to congratulate you upon the success which has attended the carrying out of the wise measures inaugurated by you at your last annual meeting.

The Society, which from its infancy, has met with so many discouragements, been the object of so much solicitude on the part of its friends, and only with the most careful nursing, been able to maintain its existence, is now, I trust, placed on a firm foundation, at least in a pecuniary point of view; able to discharge all its liabilities, and with means to aid still farther in various modes, in developing the agricultural resources of our State.

It was not without great fear of the result, that you at your last annual meeting, adopted, measures for holding the annual exhibition away from the city of Detroit; yet the result shows that the interests of the society have been greatly advanced. Its revenues largely increased, and its influence more widely extended. It has also been demonstrated that it is possible to hold a fair in many of our interior cities and villages without much inconvenience to visitors, and without much jeopardizing the interests of the society. The spirit, liberality and hospitable treatment exhibited by the citizens of Kalamazoo towards those who had the pleasure of attending the fair in that beautiful town, has won for it an enviable reputation, and set an example which other towns can well follow, but hardly expect to excel. Although the attendance was much larger than ever before at any of our exhibitions yet, very little inconvenience was experienced, so united and energetic were the citizens in providing for the comfort of all. To the ladies who labored so ardently, and with so much taste and skill in decorating and beautifying Floral Hall, the society owes a lasting debt of gratitude.

The experiment, however, succeeded so well, it should be a matter of consideration with the committee whether your exhibitions should not for some years continue to be held in the interior of the State, that all portions may share in the incidental benefits arriving therefrom.

The financial condition of the society as reported by the Secretary is as follows:

Total receipts for 1863.....	\$15,245 90
Expenditures for 1863.....	\$14,310 86
Leaving a balance on hand, January 1st, 1863, of.....	929 59
To this there should be added, due for lead pipe sold.....	131 60
Amount subscribed for 5-20's.....	6,000 00
Amount loaned Kalamazoo County Society.....	150 00
Amount due from sales of lumber.....	39 43

Making total available means..... \$ 7,250 62

The investment made in U. S. Bonds was deemed advisable on the part of the officers of the society, as affording a security that could at any time be converted into cash, though not the largest interest attainable. The loan to the Kalamazoo County was made by the business committee upon satisfactory security, and for the reason that the County Society had contributed all their means in the erection of permanent buildings on the grounds occupied by the State Society, and had given up their annual meeting, so that there should be no detraction from the interests of your fair.

The action taken at your last annual meeting, directing the business committee to dispose of the lumber and fixtures on the fair grounds at Detroit, has been complied with, and the results as shown above, netting \$1,128 16.

The society having emerged from the difficulties that have surrounded it for so many years, limiting and embarrassing its

operations, it should now be an object of consideration whether new measures may not be inaugurated that shall increase its ability to advance the agriculture of the State, and lay wider and deeper its sphere of usefulness.

The energies of the society have been, hitherto, expended entirely in making the annual fair and cattle show the sole object of interest, whilst societies of other States make their annual winter meetings productive of great benefit in eliciting information upon various subjects connected with agriculture and attractive of a greater attendance by the prominent agriculturists of the State. With a view of seeing whether we may not profit by a similar course, the business committee have invited to meet with you at this time, from various parts of the State, representatives of its various agricultural, stock raising, wool growing, and other industrial interests, with whom you may advise in relation to the best methods to be adopted by the society to develop the objects for which it was organized, eliciting discussions and addresses upon all subjects that may tend to that end. They have also invited gentlemen to prepare essays or lectures, to be delivered at this meeting upon the following subjects:

1. How can the State Agricultural Society best accomplish the objects for which it was established?
2. Fruit and fruit culture in Michigan.
3. Sorghum, and the sugar manufacturers.
4. The Agricultural College, and the experiments made at that institution with muck and composts.
5. Stock raising, and the comparative value of breeds of cattle.
6. Farming, considered with regard to the profit of scientific management.
7. Sheep culture, and the profits and prospects of scientific management.
8. Agricultural practices.

These lectures will afford an opportunity for discussion by all present, and it is expected that much valuable information will be obtained that will tend to render us more deliberative.

I deem it not improper at this time also to present to you a few suggestions that seem to me appropriate.

During the sixteen years of its existence, the society has collected and expended about seventy thousand dollars, of which at least fifty thousand dollars have been distributed in premiums, and of this almost twenty-five thousand dollars has gone to the encouragement of improvement in our breeds of cattle and horses. While we admit that some general improvement in the quality of our cattle has been made, yet it may be asked, without eliciting a very decided affirmative response, whether we have been able to stimulate such a decided improvement in our stock of horses as would classify them as of superior excellence under any particular standard. We have done something in this direction, but it might be well to examine whether, by changing in some degree the nature of our awards, and requiring to some extent a continuous series of examinations of breeding stock, and their offspring, much greater and more decided improvement could not be obtained.

The science of agriculture in many of the departments, has received accessions during the past few years, with which we have hardly kept pace. In the article of wheat, although, according to the reports of the Commissioner of Agriculture our crop now equals that of the Empire State, both for the past year, and the one preceding, and has reached over fourteen millions of bushels, yet is it not true that the quality of this important crop has degenerated, and that it has become uncertain and unreliable? May it not be possible to devise a system of experiments in the practice of its culture, that would determine, at the end of a series of years, many important questions with regard to this important crop? White wheat in the eastern portions of the State, has almost ceased to be grown, and red wheat also is much deteriorated in quality. Is the difficulty in the method of enriching and tilling the soil? or would the introduction of a different variety of seed remedy the difficulty? The various questions relative to this crop are worthy of our most profound consideration at this time, when it is considered that we have nearly a million of acres of land devoted to its growth, and that, could the society by its efforts ensure the addition of but one bushel per acre to its average production, the advantage would warrant any reasonable attempt to devise some remedy to counteract the evils to which this crop is subject.

At our annual fairs we have made some successful attempts to test many of the implements and machines that have been presented; still there is room for a more thorough system to be adopted in this department, and it may not be improper to suggest that we might hold a trial of all harvesting machinery, at a season much better adapted than that of our exhibition. Whilst the State is being depleted of a large amount of its laboring population, it would seem to be the best of wisdom to make as much as possible of our agriculture by the encouragement of labor-saving implements and machines.

In the revision of the premium list, I would recommend that class be made which shall provide for premiums to be awarded for the exhibition of specimens of sorghum syrup, sugar, fruits, and such other productions as may be deemed fitting, at our winter meeting.

There are many other ways in which our society, in its now improved financial condition, may be able to increase its usefulness and aid the cause of agriculture. The Department of Agriculture at Washington is ready to assist us in whatever may be in its power, and communication and intimate connection with it is desirable. I esteem it my duty to recommend that we should recognize its importance and usefulness, and also that we should commend its welfare and support to the consideration of our Senators and Representatives in Congress.

Our State Agricultural Society also affords the society a new means of obtaining the investigation and solution of many questions connected with science and with the practice of agriculture and horticulture. The action of this committee at its last annual meeting, in recommending to the fostering care of the State this institution, was not without its due weight in determining questions of vital importance to its welfare and success. The Agricultural College is now, I am informed, in a much improved position, and we may confidently expect much aid from it in the advancement of agricultural knowledge. We are co-laborers with it in the same cause, and the most intimate relations should exist between us.

Experience has shown us in the history of all societies similar to our own, that without a fixed permanent home or habitation, it is not likely to succeed. If in following the examples of other States the society could commence a museum of its own at some fixed central place, which should thereafter be its winter headquarters, where samples of seeds, wools, grains and other productions of value, with preserved specimens of the natural history of our State might be collected, and when yearly additions could be made to it, a time would come when it would be both attractive and of the highest utility for purposes of comparison and instruction. We also ought to have a library of reference, although it might be small. I am informed that there is not in the State at the present time a copy of the English herdbooks, nor of the English studbooks, by which our breeders may guard themselves from imposition. The want of these works has been much felt, and some action in this direction should be inaugurated.

In closing this address, I avail myself of this opportunity to testify to the arduous and unremitting labors of your Secretary. The duties of the office require so large a share of his time as to greatly interfere with his engagement in other pursuits of a permanent character, and as he submitted in the days of our adversity very cheerfully to a reduction of the salary of that office, it would seem to be only justice that some increase should be now made.

### SECRETARY'S REPORT FOR 1863.

The Secretary submitted his annual report, as follows:

To the President of the Michigan State Agricultural Society: The Secretary of the Michigan State Agricultural Society respectfully submits the following report of the business of the Society for the year 1863:

During the year 1863, from January 1, to December 31, the receipts and expenditures as audited by the business committee, and as shown by the books of the Society, have been as follows:

RECEIPTS DURING 1863.	
Balance in Treasurer's hands on January 1, 1863	\$ 881.85
Received from sales of lumber	991.55
Received from sales of tickets at the State Fair (See Schedule A)	10,552.00
Entrances received by Secretary	269.50
Special entries on horses	300.00
Appropriation by the State	950.00
Subscription by citizens of Kalamazoo	1,901.00
Total	\$15,245.90

EXPENDITURES DURING 1863.	
Paid outstanding accounts of 1862	\$ 169.82
Paid premium checks of 1862	223.00
Paid audited accounts by warrants of Business Committee (See Schedule B.)	3,593.83
Paid premiums issued for 1863 (See Schedule C.)	3,842.00
Paid for medals for 1861, 1862 and 1863	199.00
Paid amount invested in United States 5 & 2½% loan	6,000.00
Lumber accounts unpaid (D.)	39.48
Loan to J. A. Walter on account of Kalamazoo County Society (E.)	150.00
Expenses of Treasurer's office, and assistants	90.88
Total	\$14,310.40

Leaving a balance on hand, January 1st, 1864, of	929.59
To this there should be added, due for lead pipe sold	181.60
Amount subscribed for 5-20's	6,000.00
Amount loaned Kalamazoo County Society	150.00
Amount due from sales of lumber	39.33

Making total available means	\$ 7,250.52
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There is besides on hand a valuable amount of lumber stored at Kalamazoo.

The expenses of the Society as represented by Schedule B and C, are classified as follows:

1. Expenses of the Executive Committee	\$225.50
2. Expenses of Business Committee	64.25
3. Subscription to erect Floral Hall	400.00
4. Construction of buildings for the annual exhibition	791.46
5. Preparation of grounds, buildings, decorations, &c.	398.79
6. Hay, feed, straw	201.19
7. Gate keepers, ticket offices, police, &c.	182.17
8. Marshals, Superintendents, and assistants	71.25
9. Music and band wagon	110.00
10. Printing, Advertising, bill posting, &c.	429.43
11. Stationery, blank books, &c.	21.25
12. Postage, mail, telegraphs, &c.	75.00
13. Clerks and assistants in Secretary's office	109.50
14. Salary of Secretary	420.00
15. Rent of office	20.00
16. Donation to Soldiers aid Society	100.00
17. Accounts of previous years paid	24.00
Total	\$5,593.83

The amounts paid for premiums as shown by schedule C, are classified as follows:

Division	A. Cattle	\$733.00
"	B. Horses	929.00
"	C. Sheep, Swine and Poultry	282.00
"	D. Implements and Machinery	226.00
"	E. Household and Dairy products	94.00
"	F. Domestic Manufactures	117.00
"	G. Fine Arts	160.00
"	H. Fruit and Vegetables	298.00
"	I. Grain and Seed	20.00
"	K. Miscellaneous, Diplomas, postage, &c.	59.00
	Special premiums	90.00
	Total premiums	\$3,842.00

At the meeting of the Executive Committee held at Lansing in 1863, whilst all acknowledged the propriety of making the attempt to hold the annual exhibition of the Society in the interior of the State, the attempt itself was regarded as extremely hazardous, and as risking in some degree its financial condition. At that time the society had a large amount of property on the fair grounds at Detroit. Should the fair be removed from that city, that property, which consisted chiefly in the buildings and fixtures, would necessarily become only worth its value as old lumber, and would have to be sold, as it had been satisfactorily ascertained that a renewal of the lease was not to be expected, the tract of land being about to be subdivided and sold. The conclusions arrived at were, therefore, that the annual exhibition should be held at such point on the Michigan Central Railroad as would hold out the greatest inducements, and that the lumber and fixtures on the Detroit fair grounds should be sold, the whole matter, with the decision as to the point where the annual exhibition was to be held, being referred to the business committee.

ing referred to the President and the Business Committee. This committee, after giving the subject a careful attention, offered the buildings for sale by advertisement; but no satisfactory propositions being made, they were taken down and offered in lots for what the lumber would bring. The whole was sold, and netted, after all the expenses were paid \$1,121.59.

During the spring notice was given through the newspapers, and by advertisement, that proposals would be received up to the first day of June from localities on the line of the Michigan Central Railroad, for the location of the annual exhibition. At that date proposals were submitted to the committee from citizens of Kalamazoo only. The citizens of that village agreed to place at the disposal of the Society grounds adapted for the purpose of the fair, well enclosed, and a cash subscription of over \$1,800. The Business Committee immediately visited Kalamazoo, where they held a session of some days, during which interviews were had with the principal citizens, who took a warm interest in having the fair held there. During that time the propositions were accepted, and arrangements were made with the county society to erect a handsome structure to be used as a Floral Hall and picture gallery, the State society subscribing \$400 towards its erection, with understanding that it was to have the use of this hall free of expense, should any fair be held in any future year. In addition to these agreements on the part of the people of Kalamazoo, the gentlemen composing the Board of Directors of the National Association for the Improvement of Horses, undertook at their own expense the task of bringing such a supply of water into the grounds as would not only be necessary for the use of live stock, but also for ornamental purposes, and for the supply of very beautiful fountain. The liberality of these proceedings left nothing on the part of the society to be desired, unless it were an assurance of favorable weather during the exhibition, and this even seemed to be granted. The financial and general success of what was thus deemed twelve months ago, a very doubtful experiment, is stated in the record above given, and it is supposed that fully forty thousand persons were present during the four days of the exhibition, and twenty thousand were on the grounds at one time. The fears that were expressed, that not only the society but that Kalamazoo would suffer from the effects of this change in the policy of the society, there is every reason to believe, have been happily dissipated.

The entries of articles for exhibition at the late State Fair in some of the departments, and especially in that devoted to manufacturers, were not as liberal as might have been expected. Much of this, however, there is reason to believe, was owing to the opinion that no such immense gathering of people could be obtained in the western part of Michigan as that which usually met when the fairs have been held in Detroit, it is probable that manufacturers and business men will not again neglect such an opportunity to make known themselves to a new and wealthy section of the State, which hitherto had never had an opportunity to exhibit how strongly it was enlisted in the support of the State Agricultural Society. The following tabular statement will afford a comparison for five years of the entries in the several divisions:

	1859	1860	1861	1862	1863
Cattle.....	215	130	198	189	156
Horses.....	342	274	217	185	252
Sheep, swine and poultry.....	225	162	151	121	200
Implements.....	291	166	180	173	208
Baby and household products.....	94	67	107	67	78
Manufacturers.....	343	263	226	161	188
Fine arts.....	194	170	104	128	157
Flowers and fruits.....	515	588	222	281	256
Grain and seeds.....	84	64	61	29	14
Miscellaneous.....	63	44	79	26	21
Crops.....	5	...	8	3	1
Total.....	2340	1728	1588	1262	1485

After the annual exhibition, it being readily seen that the society had a balance on hand of over \$7,000, after all the expenses and premiums of the year were paid, the President was directed by the executive committee to invest \$6,000 of these funds in the United States five-twenty bonds. This has been done, and now, after fifteen years severe trials, the friends of

this association have the satisfaction of seeing it fairly placed in a position where it may enter upon a course of greater usefulness than it has yet attempted.

If a comparison be made between this society and those other States, it will be seen that its affairs have been conducted with a much greater economy. The whole expenditures, not including the premiums, for the past six years have reached about \$28,000, and this includes the amounts paid for the buildings erected in Detroit in 1858 and 1859, averaging \$4,900 per year. In the States of Ohio and New York, where attempts have been made to exert a more extended and direct influence over agriculture by the State societies, the cost of sustaining them has been much larger. In Ohio, the expenses were \$66,000 in three years, of which but \$18,000 were paid for premiums; the expenses incurred by the annual exhibitions were from \$6,000 to \$12,000 each year; the balance was paid for salaries of the officers employed in the collection and preparation of statistics, the correspondence incident to complete connection with the county societies, and with societies and associations of a like kind in other States and countries. In New York which is the pioneer in the attempt to render these agricultural societies useful auxiliaries to the practical farmer, the expenses of these annual fairs have ranged from \$4,000 to \$8,000, exclusive of constructions. The premiums have ranged, from \$4,000 to \$7,000, and the salaries of their Secretary and assistants have been nearly \$3,000 per annum.

In Michigan, partly from the necessities of the position in which our society has been placed, from the growth of the State, and its own necessity for time to grow, and from other causes more incident to the habits of the people, the whole business of the society, as well as apparently all its objects and aspirations have been merged in the annual exhibition. Whatever good our society was to effect to agriculture, must be done through that channel, for there was no other. May it not be well to suggest, now that it is perfectly able, it is time it assumed a higher and nobler purpose, and that it should become really and in earnest what the charter designed it should be, namely, an association "to promote the improvement of agriculture and its kindred arts."

On Tuesday afternoon, Feb. 9, the following essay was delivered

### ON THE OBJECTS OF AGRICULTURAL SOCIETIES AND THE DETERIORATION OF THE WHEAT CROP.

BY R. F. JOHNSTONE, SECRETARY.

"How can the State Agricultural Society best accomplish the objects for which it was established, by its exhibitions?"

This is the title of the subject which has been adopted as a part of the series that is to come up for discussion at this meeting of the State Agricultural Society of Michigan. The question is one that has an intimate relation with the progress and usefulness of the Society, and deserves much thought and attention. The exhibitions are so much a part of the societies, and the societies have themselves through State, county and town organizations, become so much a part of agricultural life and development everywhere throughout the United States, and in all countries which have made the greatest progress in agriculture, that it is evident whatever promotes the success and usefulness of the exhibitions must increase at the same time, the influence of the Society, and and have a tendency to foster and encourage the objects it was designed to build up.

It may be well, before discussing how our exhibitions can be rendered more useful, to determine what are the objects of the Society, and how they are to affect the interests of the citizens engaged in agricultural pursuits, and hence, as a matter of course, the general welfare of all the people of the State of Michigan; for it is evident that whatever develops or extends our agriculture, enriches and extends every other industrial interest, increases the comfort and happiness of all our citizens, and adds to the progressive greatness and wealth of our whole country.

I have long heard it argued that both State and county societies, and particularly our own, had become simply associations for holding exhibitions, and had no actual or really useful object beyond the collection and distribution of the means to defray their expenses, and that in fact the society was completely merged in the fair, the cattle show or the horse race, or such other term as the fancy of the complainant might chance to apply to the annual exhibitions. It must be admitted that there has been some truth in these remarks, but like any other broad assertion, it was entitled to certain qualification. This society was founded and went into operation in 1849, at a time when the population of the State did not reach 400,000, when the numbers of bushels of wheat grown was but four millions, when the number of pounds of wool clipped only reached two millions, and when the whole number of cattle hardly amounted to 250,000. If its officers, in their anxiety to keep pace with the rapid advance which agriculture has made in the last twenty-five years, occasionally overstrained the financial strength of the society, sure I am, from a somewhat severe experience, that it was allowable, and that whilst the public received all the benefit, no private interest has been built up at its expense, and not one of those most intimately connected with its business has been paid for the time and labor the management of its affairs has required. From 1850 to 1862, a period of twelve years, we find the society, therefore, most of the time struggling for financial strength and all its energies economized for the purpose of clearing it from the evil and depressing influence of debt; and hence it has sometimes been charged with neglecting the "objects" for which it was established.

When we turn to those who have been most apt to find fault, and make inquiry as to what are the "objects," beyond the opportunities for observation, comparison and competition afforded by the annual exhibition, it is very seldom that I find any one willing to determine or define what they should be, as nearly all definitions include expenditures, totally beyond the means of any of our societies.

The constitution of the society simply defines its "objects" to be "to promote the improvement of agriculture, and its kindred arts" throughout the State. This, it will be seen, is very general in its terms, and leaves the whole field open without a boundary of any kind.

The constitution of the New York State Agricultural Society defines the "objects" to be to improve the condition of agriculture, horticulture, and the household arts." This definition is somewhat more pointed than that of our own State, but still it leaves the whole subject open.

The charter of the Royal Agricultural Society of England enumerates ten particular objects for which it is established, and as these really embody in a succinct and clear form the actual propositions on which has been established one of the most useful organizations of the kind in existence, and one which has given in a greater or less degree its character to like associations all over Europe, I will here recite them as they are embodied in the charter itself:

1. To embody such information contained in agricultural publications, and in other scientific works as has been proved practical experience to be useful to the cultivators of the soil.
2. To correspond with agricultural, horticultural and other scientific societies, both at home and abroad, and to select from such correspondence all information, which, according to the Society, may be likely to lead to practical benefit in the cultivation of the soil.
3. To pay to any occupier of land, or other person who shall undertake, at the request of the society, to ascertain, by any experiment, how far such information leads to useful results in practice, a remuneration for any loss that he may incur in so doing.
4. To encourage men of science in their attention to the improvement of agricultural implements, the construction of farm buildings, the application of chemistry to the general purposes of agriculture, the destruction of insects injurious to vegetable life and the eradication of weeds.
5. To promote the discovery of new varieties of grain and other vegetables useful to man, or for the food of domestic animals.
6. To collect information with regard to the management of woods, plantations and forests, and other subjects connected with rural improvement.
7. To take measures for the improvement of the educational

of those who depend upon the cultivation of the soil for their support.

8. To take measures for improving the veterinary art as applied to cattle, sheep and hogs.

9. At the meetings of the Society, by the distribution of prizes, and by other means, to encourage the best mode of farm culture, and breeds of live stock.

10. To promote the comfort and welfare of laborers, and to encourage the improved management of their cottages and gardens.

The enumeration of the subjects treated by the Imperial Central Agricultural Society of France, in its annual *compte rendu* will indicate the complete supervision which it exercises over every division of agriculture, and the objects it has in view. It holds great exhibitions once in five years, but it takes special interest in the subordinate regional exhibitions, which are held annually in the several great agricultural divisions of that country. It reports on the state of the crops, on the various new grains and plants which are brought before it, on insects and their habits and ravages, on vine culture, on the application of chemical knowledge, on the most extended scale and by the most minute and reliable methods; on solid and liquid manures, their intrinsic values and their commercial value, on the fabrication of oil cakes from the various seeds employed for that purpose; on the manufacture of alcohol and of sugar, and the refuse of these establishments as valuable either for animal food, or for manure, on bread making, on preserved meats, on the diseases of animals, on the veterinary practice and experiments, on the silk worm and the silk culture, and on agricultural statistics, and in fact on every subject in any way connected with agricultural industry. The list of members includes the names of men illustrious in the annals of science, and these men are employed in solving problems or in elucidating propositions which are not only of the greatest importance to the agriculture of France, but to that of both hemispheres.

In truth, when I refer to France, and glance at the progress made in its agriculture since the elevation of the present ruler to the imperial throne, I am filled equally with admiration and amazement—admiration for the systematic order and arrangement with which France has been divided and subdivided, and with which each division and section has been organized and supplied with Boards of Agriculture that have been conferred upon them the duty of originating and administering the measures best adapted to promote a more extensive knowledge, a more enlarged education, and a better practice amongst the rural population—amazement at the immense flood of science and learning, which streaming from all the highest sources of human knowledge, seems like the great river of Egypt, to have swept over the land of France, enriching and fertilizing its soil, penetrating with its healthy influence into every industrial pursuit, and bringing at once from the most distant regions, and the nearest deposits, elements hitherto unknown, with which to enrich, to elevate and to enable a labor hitherto neglected. This singular progress can hardly be more thoroughly exemplified than by the fact that in 1850 there was not a regional or district agricultural exhibition in France, while in 1868 I am informed that the number of agricultural societies which were entitled to and received aid from the national funds, was 708, and the amount collected and disbursed by them, from all sources, as prizes, was \$580,000.

I refer to France here, as indicating to you how rapidly the intelligent men of that great country have seized upon the development of her agriculture as the true basis from which her industrial resources had to be increased, if her preponderance as a great military nation was to be sustained. To England, that land in which agricultural science has been the first to flourish and develop itself almost to the extreme boundary of speculative theory, combined with economical practice—where capital, science and practical experience have been united to an extent that has not been approached in any other country, and where it may be almost said, that agriculture, like certain German schools of philosophy, has reached the famous jumping off place, and now has to await for the social, scientific and mechanical world to advance, before further progress can be made, we need not refer here further than to indicate that in the charter of her renowned

national society we find the correct definition of the "objects" of societies and associations to promote the improvement of agriculture.

Having endeavored to define what should be considered the "objects" of agricultural societies, and having shown that whilst the annual exhibitions form a part, and a very large part, of the working machinery by which the objects of the society may be promoted, yet that they cannot justly be considered the sole aim and end of any association of this description, I will now endeavor to consider the exhibitions themselves, and how they may be made to perform their appropriate function.

The annual exhibitions are beneficial, to the State and to the people, in two ways. The first of which is, as a social institution, that exerts a healthy and invigorating influence on the people; and the second is, their educational influence, by bringing the means of observation and comparison within the reach of the agriculturists and other industrial classes at the least possible expense to them and to the community, and thus promoting in an eminent degree the development of the resources of the State.

Socially considered, it is a remarkable fact, which I leave for the present to the consideration of the philosophy of civilization, that it was in the most democratic and free States of antiquity, that like institutions in the form of great games and festivals, were first established, where the people of different States, but of like origin and language, might congregate at stated periods, and, leaving aside all difference of opinion, all agitating discussions, all political and sectional strife, meet in a common arena where might be displayed and made manifest their individual wealth, their attainments in learning, in arts and in science; and that in the present times it is in the two great States, most distinguished for their free forms of government, that the great social gatherings of the people, denominated agricultural exhibitions, have been most fully developed, and have become almost necessities incident to the wants and instincts of both nations.

It is under the second, the educational principle, however, that we must consider the annual exhibitions of our society at this meeting. To do this we must first consider the formula under which it is conducted.

The design of the conduct of the exhibitions is to bring within the observation of the whole people, in a single field, the advances made in the several grand divisions of productive industrial life, namely, agriculture, mechanics, manufacturers, and the arts of design.

The first includes all those classes or divisions, which provide for encouragement of competition in live stock, production of crops, the improvement and conduct of farms, the produce of the orchard and dairy.

The second has a direct bearing on the first because it includes all those inventions and constructions to which either as implements or machinery, agriculture has to resort for the performance of its labor.

The third includes all these classes which are assigned for the exhibition and comparison of the productions brought forth by the combination of raw material with mechanical skill and incidentally with the arts of design.

I shall confine my remarks and suggestions principally to the agricultural division of the subject before us, because if the Society can do anything to improve and render more productive the agriculture of the State, that alone will bring improvement and progression in the others.

During the fifteen years of the existence of this Society, there has been expended in premiums to encourage and stimulate improvement nearly fifty thousand dollars, and a very large proportion of this sum has been devoted to the classes that include cattle and horses. Is it not suggestive to stop and ask what has really been done to introduce any systematic improvement in either of these important divisions of live stock?

Again, Michigan is peculiarly a crop producing State, largely dependent on that power for her wealth, and particularly on her wheat crop. If we ask to-day, are the varieties of wheat which we cultivate of a higher quality, more productive, or better able to contend either with its insect enemies, or with

the changes of the climate, or better adapted to the peculiarities of our soils, than were the varieties grown fifteen years ago, what would be our answer? I fear very much that we should have to answer that in no one of these points, were our wheats of 1864 actually equal to the wheats of 1849! It is true that we produce a greater quantity, in the aggregate, for we have a greater area of improved land, and a population of double the number. It is estimated that the wheat crop of Michigan for the past year, with her population of 800,000, was equal to that of New York, with her population of over three millions. At least the returns to the Department of Agriculture, indicate the crop of each of these States at only a little over fourteen millions of bushels. Now, the returns of your State census in 1864, just ten years ago, indicate that wheat was produced here at the rate of only fourteen bushels as the average of all the lands sown with wheat in 1853. It is estimated that we now sow with wheat about a million of acres, and it will be seen that though we now grow a larger proportion of the coarser wheats than we did in 1853, yet the average production is but fourteen bushels per acre, indicating that during the existence of our Society this important product has not been improved, the system of tillage connected with its cultivation has remained stationary, and in fact, that no material progress has been made. On the contrary, we find that during the twenty-five years' existence of the Agricultural Society of England, the wheat crop which in 1839 was estimated to average in that country but seventeen bushels per acre, has now doubled, and that the crop of last year which was one of extraordinary general productivity, is estimated to average over thirty-six bushels, and is deemed to have approximated to nearly forty bushels per acre, many of the fields having yielded as high as 6, 7, and in some extreme cases, 8 quarters per acre, or at the rate of 48, 56 and 64 bushels.

Compare the action of the two societies: on the one hand our society, beyond the offer of small premiums for the best ascertained crop, the best bushel of seed, and the best barrel of flour, has done comparatively nothing to direct the attention of its members to the improvement of this crop in any way whatever, and the results are that the wheat crop is not worth any more per acre than it was when the society was inaugurated.

On the other hand, the society on the farther side of the Atlantic has applied to the cultivation of wheat, the results of experiments, which have been conducted with the utmost skill, learning and ability—some of which have taken several years to complete. It has taken pains to spread throughout the land, a complete knowledge, both by precept and practical example, of the results of the researches and experiments of science on the cultivation of land, the application and economy of measures, the effect of implements and machinery, the qualities of new varieties; at a considerable expense to be sure for all these labors could not be performed without the use of time, means and knowledge, and were not to be had for nothing. But certainly the whole aggregate expended, would not reach a small fractional part of the results. And the results, what are they? To compute them by the mere value of the duplication of the wheat crop alone, is only placing a small part of their true value upon them. While the wheat crop has been doubled, the productive value of nearly every other acre of land in the kingdom has increased in a like degree, for the ability of each acre to sustain more live stock, and to produce nearly double the amount of beef, mutton and pork, which it did twenty-five years ago is likewise demonstrated by facts and figures that are unquestionably correct.

It will easily be seen, that in this State, had our society been able to devise, ten years ago, and to carry out, even at any moderate expense per year, a series of trials and carefully conducted experiments, that would have had the effect at the end of five years to raise the average production of wheat from fourteen bushels to sixteen bushels per acre, our crop for the past year would have been increased two millions, or in other words, the efforts of the society in this one direction properly applied, would have added to the actual wealth of the State at least two and a half millions of dollars, in a single season. But suppose that only half this result was accom-

ished, would not such a return amply repay the society and the State for any reasonable expenditure.

I believe that a method might be devised by which in connection with the county organizations, a very great impetus might be given to improvement in the cultivation of that one important crop, and just as sure as the wedge is once entered, improvement in other directions are sure to follow.

I have referred to the exhibitions of live stock as being susceptible of improvement. The exhibitions of cattle are in three sections. The first is of animals shown as the best for breeding purposes. The second, which consists of fat and working cattle, simply the produce of the first, and so is the third, which includes cattle for dairy purposes. The second and third are very properly the recipients of premiums for their individual excellencies; but I think that a series of premiums should be introduced into the first which would tend to bring forward year after year for comparison and observation, the produce of the aged breeding animals, so that we might be able to arrive at the comparative qualities of each herd, and be able to indicate to its owner wherein his families excelled, and in what points they were inferior. As it is by the power to produce stock that will grow rapidly, mature at an early age and make the greatest amount of beef out of the food it may require that breeding animals should be valued, I consider it of importance that their progeny should be exhibited at the several ages till three years old. Should such premiums be offered, I believe they would have a tendency to stimulate breeders and to render them more particular in their selection of the animals they themselves would introduce from abroad.

Horses are bred so much according to the fancy of individuals, and so little upon any general system, with a design to improve, or even to obtain a stock of high class animals, that I do not know that at present any material change in our programme can be recommended to your notice. There is still in the State a very great lack of a general understanding amongst breeders as to the quality of the animals needed. It might be that by a general co-operation with the county societies, a more general determination could be created throughout the State to use only breeding stock of a higher quality, and of a certain well-defined points, and that in the course of a few years the weeds would be rooted out.

There is a fine field at present open for the breeding of mules, which is likely to continue long after some other excitements have died away, and, which as it is likely to be productive of a large income to the State, the society should notice. A mule at two or three years old is more easily raised than either colt or steer, and will bring more money. A member of this executive board, during the past week, sold ten mules of his own raising, ranging from two to three years of age, and the lot brought him \$1,500. There is not any kind of stock that is likely to pay so well for a long time as this.

From the experience which the society has already had, I esteem it of importance that more attention should be given to the trials of implements and machinery. It is very evident that the western farmer will have to depend largely, for some years at least, upon the use of labor-saving implements. There are four sections into which the implement division may be divided, but three of them are of primary importance. The first contains the classes of implements and machines used in tillage. The second is the class used for harvest purposes, and the third the classes used for threshing out and cleaning crops and the fourth contains all that range of miscellaneous machinery, used for various purposes, but which are as necessary in their place as any other. Might it not be well to consider the propriety of holding a general critical trial and examination of one of the three last named sections once in three years. I believe that were we to devote the time afforded by the exhibition to a thorough examination of one section once in three years, making the premiums of high value in that particular class to be examined, we would be doing more good to both manufacturers and operators, than we now do. The last year's experience inclined me to the opinion that we attempted too much when we undertook to give a trial to all kinds of machinery. I was present at Battle Creek, during the late meeting of the agricultural association at that place, and the thor-

ough trial of the horse power and threshing machines, which took place seemed not only to give interest to the exhibition in that department, but was really useful and meritorious.

Arrangements might be made for a trial of reaping and mowing machines, and other harvesting machines, during the season. The awards made by the society have heretofore been made simply on the exhibition of the machine, and not on its merits as tested by work. Whilst these awards are creditable to the workmen who got up the successful machines, they certainly are rather injurious than beneficial to the agricultural interest.

Nor should we neglect or overlook the department intended to develop the arts. It is upon that department we must rely if we desire that our exhibitions should diffuse a taste for elegance and novelty of design, and send home its members and their families imbued with that admiration and love for the beautiful that seems necessary if we would render the domestic circle the abode of happiness.

Besides, the arts promote in a wonderful degree, industry, mental energy, and an increase of comfort and of wealth amongst the people, by the development of the resources of the State. The oldest historian mentions in terms of admiration the immense wealth and wonderful development of industry in the little island Samos. Agriculture and manufactures, developed by art, raised the inhabitants of that little State, whose extent was not so large as that of this county of Washtenaw, in which we now are, to such a degree of wealth and power that to be a Samian was to be a synonym for industry, energy and riches. The soil was a clay, and the plastic arts were employed in its potteries. These potteries carried the commerce of the island to every shore of the known world, and even to the then unknown regions beyond the pillars of Hercules. Art, developed by the skill and genius of the people, made the soft clay more precious and of far more value than fine gold, while agriculture terraced its mountains, till every foot of the land on hill and in valley teemed with corn and oil and wines, and its ships were sought by all other nations engaged in war or in commerce. Thus agriculture, mechanics, manufactures, beautified by art, developed the resources of this little island of the Aegean, till it became the rival of great empires.

The same sun still shines on its fertile valleys and its rough declivities; the clay that was of old the richest of treasures still exists in its ancient abundance; still over it glows the most genial of climates; still around it flows the deep blue waters of the Aegean and the Mediterranean; but alas! agriculture lies buried beneath the ruins of the terrace that was at one time her pride and her glory. Commerce sits on the shore and weeps over the memories of the past; and art has fled to lands where freedom exists, and where labor is honored. The glory of Samos has departed!

These are the suggestions to which I would call attention at the present meeting: whilst there are many others that demand our attention, I think it will be found that it is not best to attempt too much in a single year. If we should succeed in the directions which I have indicated that very success would lead to results of the greatest benefit to the State and fulfil to our utmost hopes the objects for which the society was established.

Mr. Baxter agreed with the Secretary in most of his views, but did not think that the causes assigned by him to account for the falling off in the white wheat crops in Michigan were correct. He acknowledged that there was a great falling off in the crops, but thought it was owing to the want of change in the seeds used and the attacks of insects which always attack the finer varieties; and not to the wearing out of the virgin soil.

Prof. Welch agreed with Mr. Baxter, in thinking that the falling off in the wheat crops was mainly owing, in this and other States, to the deterioration of the seed. He had noticed that the seed now sown was smaller and not so plump

as that used formerly. He also touched upon one of the subjects treated of by the Secretary,—the improvements in the fine arts. He argued the necessity of a more comprehensive classification in this department than was usual, it being customary to collect in the Floral Hall a conglomeration of everything, whether it belonged there or not.

Mr. DeGarmo, of Oakland county, thought that the falling off in the white wheat crop was not altogether owing to defects in the seed used, but somewhat to the nature of the soil. He had observed that wheat from the same bin, sown on a rich soil, failed by reason of the attacks of insects, while on a poorer soil the crop was good, because the soil was too poor to support the insects.

Mr. Starkweather, of Washtenaw county, suggested that the proximity of crops of red and white wheat might influence each other, the white wheat being impregnated by the pollen of the red, and thus deteriorated.

Mr. Greene, of Oakland county, thought that, with the proper tillage and sustenance, good white wheat could yet be produced in Michigan. In his county it had been done during the past season, the crops in many cases averaging from 25 to 35 bushels to the acre.

The President, (B. Follett, Esq.,) remarked that he had been engaged in the milling business for the last twenty-five years in this particular locality, and he would recall to the minds of those who argue that white wheat was as easily grown now as it was fifteen years ago, that then red wheat was so seldom grown and was in such low repute, that a miller would no more look at it for purchase than he would so much rye, and that out of twenty-five thousand bushels that were then offered during the season in the Ypsilanti market, there would hardly be five loads of red wheat, and it was with difficulty that the growers could find a purchaser; now it was different, red wheat was the prevailing variety, and white wheat was the scarce article. He could not say whether it was the fly, or the climate or the deterioration of the soil, or it might be a combination of all these agencies, but most certainly, that power to produce white wheat with certainty, and of the high quality for which this section of the State was noted fifteen years ago, had departed, and the society could not do a more useful service to the agriculturists than to institute inquiries and investigations and experiments that would aid in arresting this deterioration in the wheat crop, and one which he considered a growing evil.

Mr. Greene believed that a more general use of manure would have the effect desired. So far as his experience went, he was satisfied that wheat was grown by too many farmers without

any care or labor in saving, and applying manure to their lands. He recited two or three illustrations within his own knowledge, where excellent crops were raised, by the use of manure, while the neighboring farmers were groaning and grunting, and making general complaint about the midge and the fly, and the winter killing, and the drouth, and the rust. Let the farmers save their manure and apply it to their land and there would be less complaint, for the manure would make the wheat grow so strong that the fly could have its share, and there would be enough left for a good crop too.

Mr. Johnstone remarked, that what he had asserted in the address then under discussion had been the results of a long series of observations not only by himself, but by men who were much interested in the purchase, sale, and supply of the most important of all our crops. After some fourteen or fifteen years' opportunities to observe the supplies of Michigan wheat by sample, and by actual inspection, brought into the Detroit market, and before the Board of Trade, it was impossible to come to any other conclusion than that the wheat crop was in a course of deterioration, and he deemed it his duty not only to call attention to it, but also to suggest such practical methods of improvement in this crop as could be carried out at a small expence, and yet which might lead to some beneficial result. He believed that no experiments of a merely scientific character would be of the least service, no matter how well they might be reported, or how liberally the reports might be distributed. The practice and the results, should be brought under the observation of farmers in such a way that they would have to stumble over them, before they could possibly get along, wedded as they were mostly for better or worse, to the practices that had become their second nature, it was impossible for them to turn to the right or the left, to search out what was new. Place the improved practice, the improved seed, the improved machinery, so that they would fall over it, and they would get up and endeavor to find out what had hurt them.—Neither in New York or Ohio or in New England or in fact in any other State, had any practical method been devised by which the generality of farmers might be roused to the necessity for a better system of cultivation of the great bread crop. Now he would propose that this society should undertake the initiation of a series of measures that would bring directly under the eyes and noses of farmers, results that they could not help but see and observe, and his plan would be for this society to unite with such county societies, say two or three at first, and to offer a fair remuneration in conjunction with the county so-

society which might agree to it, to such farmers as would offer the most favorable proposals to grow a field of wheat under certain conditions, rules and regulations, as might be matured by this society. If it were desired that a new variety of seed should be tried on the same scale as a farmer would grow it, and under the same conditions, the seed could readily be procured through the Department at Washington. In this State we have different soils and somewhat of a varied climate, what was adapted to Monroe county might not be the practice or the method best adapted for Kent or Ottawa; what was suitable in Cass and Berrien counties, might not be available in Oakland, Genesee or Saginaw. Hence the county agricultural society, could be associated through their officers, with this society for advice consultation, and information to an extent, of which in this brief discussion little could possibly be known. In this matter of improvement of wheat, the speaker went on to show that there was not a farmer prepared to say how great a crop could be grown, or what was the maximum of either quality or quantity in any district. Could the society initiate a series of experimental crops, grown under certain rules, and liable to inspection and report by its officers, and the watchful care of the officers of the county or town society of the locality in which the experimental crop might be grown, insuring the individual against any loss by the amount of premium, or award, he believed much good would be effected; but this was a system that would have to be followed up; for a single crop or a single year tells us nothing, affords no data on which any general practice can be based, and only creates a little gossip which has not the least beneficial effect.

Previous to the adjournment of the discussion Tuesday afternoon, it was deemed advisable that some practical point should be arrived at, upon which to hinge the result of the argument. It was therefore, on motion of Mr. Baxter, of Jonesville,

*Resolved*, That the State Agricultural Society by its Secretary be requested to correspond with the several county agricultural societies in this State, and ascertain the relative amount of white and red wheat raised, the causes of abandoning the culture of white wheat, and the relative productions of each variety.

The meeting then adjourned.

**BEEF TEA.**—Broil a slice of juicy steak, but do not cook it too much; season it with salt and a little pepper, cut it into small bits, saving all the juice. Put it in a bowl, and cover with boiling water. Let it stand where it will keep the same heat for half an hour. In this way you secure the pure juice of the meat. It will be found the best and simplest way in which it can be made.

## HORTICULTURE.

### HORTICULTURE IN MICHIGAN.

The following able and interesting addresses were delivered at the winter meeting of the State Agricultural Society:

BY J. C. HOLMES, ESQ.

Tuesday evening, February 9th, 1864.

Mr. J. C. Holmes, of Ypsilanti, the first Secretary of the State Agricultural Society of Michigan, was introduced, and delivered a very interesting lecture, principally on horticulture, which was listened to throughout with profound attention. He said that perhaps there were some present who were at the first fair of the society, held on the 25th, 26th and 27th days of September, 1849, upon a small piece of ground fronting on Woodward avenue, in Detroit, adjoining the estate of the Rev. George Duffield, and remembered the display of stock and articles exhibited at the time. How that many of the contributors thought they had brought perfect stock and articles for competition, and very many of them were disappointed at the unjust criticisms, as they called the remarks of the several committees appointed to make the awards. Specimens of the best the State could afford were there on exhibition, and exhibitors were honest in the belief that they could defy competition, but in those days many of them learned lessons that they did not soon forget. Immediately after the close of the fair, associations were formed for the purchase of improved stock. The illusion they were under that their products were very superior was suddenly dispelled. That exhibition of the best that Michigan had on hand, and was relying upon for future use and competition with other States marked an epoch in the agricultural history of the State. The desire and determination of the people to make valuable agricultural improvements dates from that time. The State Society, with its auxiliaries, the county societies, have accomplished much, there is much for them to do. Agriculture in Michigan is perhaps on its way to perfection, but notwithstanding the long strides we have made towards it, the goal is still far distant.

Speaking of fruit, he said it is not many years since the fruit culture of Michigan was confined to a very few varieties, which he enumerated. On the evening of the 5th March, 1844, a few persons met at one of the hotels in Detroit and organized a Horticultural Society. Those persons were Wm. Adair, John Ford, J. C. Holmes, Robt. Stead, M. Howard Webster, John Lansden, Robt. Radford, Thos. Hall, J. B. Piquette and Henry D. Hastings. All but the three last named are still living and engaged more or less in horticultural pursuits. At an adjourned meeting on March 16th, 1846, many of the leading citizens of Detroit were present and joined the Association. For a time the Association flourished and seemed to exert a beneficial influence on the pomology of the State. Exhibitions were held, discussions entered upon, and exchanges of scions made; Michigan pomologists became better acquainted with each other and the pomology of the State. In the last twenty years there has been a great increase in the orchard products of the State. In 1840 the value was set down at \$16,752, in 1850 \$142,650 and in 1860 \$1,137,678.

The speaker adverted in eloquent terms to the beauty of fruits and their growth. What, said he, could we do without them? They fill and round out and make beautiful our means of living in the world. They seem to have been shed all over the earth, as if scattered from a hand moved by a heart full of love. Our trees, shrubs, vines, everywhere, if we but look they answer our search, smiling in all the delicate blushes of white, and, purple, and green, and yielding to our grasp as if all their mission were one of delight to others. They come so easily and spontaneously that we can scarcely fail to think of them as a gift direct from heaven. He urged the Society to put forth its strong arm, voice and influence in developing the Pomological and Horticultural resources of the State; then

courage the planting of orchards; the selection of varieties best adapted to our soil and climate; and the production of new varieties that will be better in some or all other respects than anything we now have. He believed that Michigan was destined to become a leading fruit growing State, and hoped she would establish a character for the quality of her fruits second to none in the Union.

## FRUIT IN MICHIGAN AND ITS IMPROVEMENT.

BY T. T. LYON, OF PLYMOUTH,

The time is doubtless within the memory of most of us, when almost the only mode of increasing favorite fruits, known to the great mass of the people, was by the removal and planting suckers from the parent tree; while the favored few who possessed a knowledge of the process of grafting, had been led to invest it with such a series of mysterious conditions that, in the minds of more ignorant it was resolved into a sort necromancy. During the early settlement of our State, this feeling was to some extent in existence; and the broad acres of nursery stock, which have since grown up to supply the material for our more modern orchards, had not yet found existence, even in the misty visions of dreamland.

The early settlers of our State coming, as many of them did, from the fruit producing regions of Western New York and New England, brought with them much of the taste for fruit culture which had already developed itself in those favored sections; and hence, were not long surrounding themselves with such fruits as could be obtained from the seedling nurseries of the old "habitans" who had so long vegetated upon the borders of the State, eking out, occasionally, by a box of choice sprouts, which some pains-taking emigrant had brought with him, as memento of his former homestead.

Although the old orchards of the French *habitans* furnished abundant evidence of the success of the apple and pear, in the vicinity of large bodies of water; doubts were, for a time, entertained as to the success of those fruits in the more inland portions of our State. A few years, however, sufficed to eradicate these doubts, and our career as a fruit growing State may be considered as having commenced with the rise of nursery enterprise, and the grafting of our seedling orchards, about the year 1836, or possibly earlier.

From this period, through the establishment of local nurseries, and the importation of trees, mostly from New York and Ohio, the growth and extension of orchards has gone on at a rapidly accelerated rate. Yet the real value of our State, as a fruit growing region, has only been properly understood by persons not resident among us, within a comparatively recent period. Indeed, it may fairly be doubted whether it is yet fully appreciated even by ourselves.

Most of the varieties of fruit which succeed in New York and New England, are, at least, equally successful with us in Eastern Michigan. As an illustration, the Old Red Canada, which has become the leading market apple of this section of the State, under the spurious cognomen of Steel's Red Winter, can only be grown successfully in Eastern New York and New England, under the most careful and liberal treatment, while specimens, of only medium quality as grown here, when sent to Mr. Downing, of New York, were found by him to be so superior as to excite grave doubts in his mind as to their identity. This state of affairs was said to have been very noticeable, at the meeting of pomologists at Buffalo, in 1848, where collections of Michigan grown fruits were for almost the first time brought under the notice of eastern pomologists, and where many of the most common old varieties, as grown here, were thought to be *spurious*, on account of their unusual size and appearance. Within a very recent period, much has been done by our State Agricultural Society's annual exhibitions and through those of the American Pomological Society, to diffuse a knowledge of our capacities in this respect.

With the advent of this last named society, came the development of the fact that the success of nearly all varieties was restricted to comparatively narrow limits, and so much

does the question of profit depend upon the proper understanding and application of this fact, even within so narrow a limit as the settled portion of our own Peninsula, that failure in this respect is believed to be one of the most fruitful causes of unprofitableness in our orchards.

It would, doubtless, be invidious for so humble an individual as myself to attempt to determine how far particular causes enter into the general question of the success or failure of varieties. We will therefore, content ourselves with the division of fruits, in the first place into two classes, the hardy and the tender, applying this distinction to the tree alone. Throughout the eastern, northern and northwestern portions of the section of the Lower Peninsula which has been submitted to settlement, extending to and including the Saginaw and Grand River valley, the whole of which may be characterized as a *timbered region*, none of our ordinary varieties of apples or pears (to which these remarks are mainly intended to apply) are found to be seriously objectionable from lack of hardiness. The southwestern portions of the State, on the other hand, assimilate more nearly to the character of the adjoining portions of Indiana, and Illinois, and may be characterized as the *prairie region*, in which only the more hardy varieties can be relied on with safety. Between these sections lies a broad belt of territory, possessing qualities intermediate between the two. That climate has much to do with the peculiarities of these two sections, few, we opine, will be disposed to question. Indeed, the whole region is swept by the prevailing southwesterly winds, which, being with them, in a good degree, the climate as the broad western plateaus, over which they pass, while the *climate*, and, with it, the *character* of the country, at once undergoes a change, when we fall so far under the lee of Lake Michigan, as to submit those winds fairly to the influence of its waters.

That these principles are, to a greater or less extent, the result of *soil* as well as *climate* we are forced to conclude, from the well established fact, that varieties that fail on prairie soils are often found to succeed on those differently constituted, although situated similarly in other respects.

Another difficulty which seems to prevail extensively throughout the entire west, is the alleged unproductiveness of many of the standard sorts of the east. In the present state of horticultural and pomological knowledge, the causes of this comparative unproductiveness must be admitted to be imperfectly understood. In the absence of other apparent causes we may be allowed to give as a probable one, the great richness of our western soils in vegetable matter, which is favorable to the production of wood rather than fruit, aggravated by the peculiarity of our climate, in the greater heat and dryness of our summer, thus inducing a cessation of growth for a time, followed by a second growth, continuing late, leaving the tree with the wood but imperfectly ripened at the opening of winter. The consequence of this would be that many of the incipient fruit buds of summer would be converted into wood buds, while others would be liable to be ruined, in their unripened state, from the joint action of frost and moisture upon their overloaded tissues. If we admit the soundness of these assumptions, the remedy is obvious, viz.: The thorough underrainage of the soil, where needed, and the adoption of the means most effectual to secure a vigorous summer growth, and the early ripening of the wood, among which we would mention, as the most obvious and efficient, the thorough cultivation of ground, early in the season, and the avoidance of all cultivation after June, with the pinching in of the growing shoots after that season. This assumption, as to the cause of the unproductiveness complained of, derives additional force from the fact, as a rule, our soils increase in richness as we go westward, while this alleged unproductiveness manifests itself in a similar direction, with little apparent regard to the distinction between timber land and prairie.

With the rapid opening up of the farming lands of our State, we have, for some years past, been made conscious that corresponding change is going on in our climate. The opening of so large a surface to the direct action of the sun's rays, causes the more rapid dissipation of moisture, and gives additional force and drying effect to our winds, while, at the same time,

It is believed seriously to diminish the amount of our rainfall. The effect of all this is to subject us to greater and more sudden variations of temperature. The evidence that this is really the case, may be found in the fact that the Peach, which once was nearly or quite as sure with us as the Apple, has become so uncertain, from the winter-killing of the buds, and even the trees, that, at the present time, except in favored localities a crop is the exception rather than the rule.

With a knowledge that this evil is upon us, and that it is likely to prove a growing one, we may well inquire, what is our remedy? I reply. Stay the axe! Leave a sheltering belt of timber along the exposed sides of your orchards, and even of your entire farms; for the effects of this evil are not confined to your orchards alone, but extend themselves to the entire products of the farm. And if the evil work is already done, lay the forest, or the nursery or both, under cultivation! Plant belts of rapid growing trees for shelter, and fill in with evergreens, to spread their sheltering shields around you during the fierce storms of winter! Pass laws to shut from the highway the countless herds that make it their resort, and border it with shade trees, to yield a grateful shelter to the traveler during the heat of summer, while at the same time, it subserves the general purpose of protection. It is difficult to imagine the full benefit to a country, of breaking up the winds passing over it, by a system of windbreaks, about the farms which compose it. And here allow me to urge upon this society the importance of making its influence felt, in favor of the passage of laws for the encouragement of the objects above described.

While the State at large is happily situated, in the main, and is capable of competing favorably with any other section, of equal extent, in the production of the hardy fruits, we possess yet another section, in which even *this lack of protection* is turned to the advantage of the fruit grower. I allude to the Peach region, as it is called, along Lake Michigan. Public attention, it is true, is chiefly directed to St. Joseph, but it will doubtless be found that the protecting influence of the lake is operative along the entire eastern shore; and that, wherever suitable soils occur, then the Peach will be found successful, as far north as Grand Traverse. I am assured, by Senator Mears, that at Lincoln (where he resides) near the mouth of Sauble River, if I mistake not, the peach bugs have entirely escaped injury from the terrible frost of the first of January last. How far back from the lake shore this sheltering influence can be relied on, must be determined by experience. Growers, at Grand Rapids, forty miles inland, claim to derive benefit from it, and they probably do, to a slight extent; but it may be suspected that their exemption will be shown by the clearing up of the intervening country, to have depended mainly upon the shelter of the timber with which they are surrounded. It will be recollect that the lake grows narrower, as it extends northward, and this fact, together with the increased rigor of the climate, as we go in that direction, renders it probable that the exemption may prove less perfect, as we go northward; or, at least, that the influence will prove efficient to a shorter distance inland. The same cause that operates to check the intensity of the cold during winter, is no doubt equally efficient against early frosts in autumn; and it remains for experience to determine whether this happy combination of causes does not produce a climate as well adapted to the growth of the vine as that of the favored regions about Lake Erie.

With a soil and climate so favorable to the production of fruits, and with the superior facilities for its transportation afforded by our lakes, rivers and railroads, it will be surprising if our State does not rapidly assume a leading position as a fruit producing region. In the building up of this interest it is difficult to overestimate the importance of a general diffusion of such information as shall lead to a judicious selection of varieties, and to the adoption of a well digested system of planting, cultivation, pruning and management. As an illustration of the importance of these considerations, I may be allowed to express the opinion that, in some otherwise well managed orchards, the value of the annual crops of fruit is diminished fully one half, on account of the unfitness of a large proportion of the varieties grown; while, in others, the entire crop is so in-

ferior, in consequence of injudicious selection of soil, or locality, or neglect of proper management, as to be fit for little else than cider.

To secure the diffusion of such knowledge should appropriately be the duty of a State Horticultural Society, aided by tributaries spread broadcast over the State. Sundry attempts have been made for the establishment of such a society, but, so far, I regret to say, there appears to have been too little public spirit among those who should have been the friends of such an enterprise, to sustain it.

Failing in this, its friends have turned to the State Agricultural Society, which, embracing a wider field of operations, has been able to draw support from the public treasury, and thus to hold on its way. Our horticultural exhibitions form a not unimportant feature in our annual display, and they assume unusual importance with us, from the fact that they, with their local auxiliaries, constitute the sole means of horticultural display and comparison to which our citizens have access.

As the leading purpose of such an exhibition should doubtless be to disseminate correct information, and to excite emulation, we may be allowed to examine the processes heretofore employed, and observe where improvements seem to be suggested by the experience of the past. For several years past, the exhibition of fruits has been held in a hall by itself, as a means of withdrawing it from the crowd which so obstructed Floral Hall, that it became difficult for committees to do their work, as well as impossible for visitors to gather the information they came to seek. In making this change, the authorities of the society seem so far to have withdrawn their interest from this department, that it has been suffered to fall into neglect. Formerly the shelves were substantially and neatly put up, and everything unseemly was hidden by a neat covering of muslin. But, more recently, rough shelves, of the most hasty and primitive workmanship, have been put up, sometimes as late as the second day of the exhibition, and always with no means of hiding their deformities. This neglect has doubtless arisen from the absorbing nature of the duties devolving upon the officers of the society, rather than from any intention to slight this department.

The society's programmes have always, as should be the case, associated flowers and fruits in one division; and, under the circumstances, it would seem but appropriate that they should go together, into the same hall. The same exhibitors, as a rule, show both flowers and fruits, and the same classes of persons will be found to indulge in the one, whose tastes attract them to the other. But it will be asked, what would become of Floral Hall with the flowers removed? It may be replied, that flowers have not recently, if ever, been the leading feature of the hall. The name has been but a moniker—Flowers have been employed for ornamentation, where ornament was already in excess. The hall has been strictly a hall of fine arts, with floral ornaments interspersed. In the hall of fruits the flowers are needed to increase the attraction, as a means of ornamentation, and to fill the only place in the exhibition, where their absence would seem inappropriate. If the vegetables, also, be afforded a place in the same hall, it will become what it appropriately should be, a *Horticultural Hall*.

As a means of correcting our nomenclature of fruits, for several years past a Pomological Committee has been put in charge of a department, charged with the duty of correcting the names of fruits entered for exhibition. This committee has doubtless been the means of correcting many errors, and of disseminating much valuable information; but, more recently, the duties of this committee, those of superintendent of the hall of fruits, as also those of members of the Executive Committee, have devolved, mainly, upon one and the same individual; and the consequence has been, that he has been overtaxed, and the duties of the Pomological Committee, as the ones most easily ignored, have only been performed in part, and that part at so late a period as seriously to detract from their usefulness.

As one of the most important means of disseminating information as to the most desirable varieties to be planted, I cannot too strongly urge, that committees be required to embody, in their reports, the names of those varieties, in the collections

to which they shall award premiums, upon the merits of which their awards shall have been based, as well as the names of all the single varieties that shall receive awards; and that it be made the duty of some officer of the society to see that this be done prior to the acceptance and delivery of such reports.

The idea seems to have obtained with many that this is a comparatively unimportant interest, and, hence, one that holds but a slight claim upon the fostering care of this society. The idea, if really entertained, I conceive to be a serious error.—Without professing to be in possession of accurate statistics on which to base my opinion, I entertain the belief that, at the present time, the value of fruit exported from many sections of our State, and among those I reckon the region where I reside, is greater than that of any other single staple. What proportion the value of the entire fruit exports of the State may bear to that of other staples, I am unprepared to state, but I am decidedly of the opinion that the time is rapidly approaching when, as a staple interest, the growth and exportation of fruits will stand at the head of the list.

Assuming this to be true, allow me to inquire if it does not furnish an unquestionable claim for the application of an equalizing process to the present list of premiums. While in another department no less than forty dollars premium is offered for a single animal, and as much as thirty dollars in numerous instances, in the department of fruits and flowers only a single offer of ten dollars is made, while all others range from five dollars downward, and, notwithstanding the discrepancy, the expense of making the exhibition will be found to be very little, if at all, in favor of the higher premium.

When we take into consideration the pecuniary condition of the society, and the fact that this state of affairs has long been felt as bearing unjustly upon this interest, but has been held in abeyance heretofore on account of its pecuniary condition, we trust this will be felt to be an appropriate occasion for the urging of such a request.

The constant and rapid increase in the consumption of fruits within the last few years admonishes us that our facilities for its production are likely to be fully taxed to supply the demands that must, in the nature of things, grow up about us, and with the well known profitableness of this branch of industry, and our unrivaled capacities in this direction, it would seem to be the dictates of true wisdom that it should be fostered and encouraged in the most earnest and efficient manner.

Mr. Baxter, of Jonesville, said the subject was one of importance to the State. His attention had been devoted principally to the cultivation of the apple, and he would like to hear some one advance his views on preventing the worm on the apple. In his section fully one-third of the crop was deteriorated by the worm.

Mr. Clizbee, of Branch county, had paid some attention to the cultivation of fruit and the apple. He seeded down the orchard, never ploughed it, and placed a quantity of coarse straw and manure from the straw stack, and turned in the hogs, the year round, except during the time the apples were ripe and falling. The reason he never ploughed the orchard was because he considered the tree stood in need of all the soil for sustenance.

Mr. Taft, of Plymouth, had given the subject of fruit raising considerable attention. He considered the roots of trees required trimming as much as the tops. He kept the ground mellow and open, and ploughed it. If the ground is left to sod the tree becomes dry and stunted, the leaves become small, and the fruit, consequently, was of an inferior quality.

Professor Welch considered they should have another session in view of the importance of the subject, as it was practical to the last degree. The subject of ploughing orchards was alone worthy of the deepest consideration. There were difficulties of great magnitude to encounter, which he wanted understood. He went into the question of preparing the ground. In Eastern States, where land is worth \$700 per acre, it would pay to lay out \$150 per acre in trenching, draining, etc., but in this State, where land is worth only about \$75 per acre, it would not pay to expend so much. He did not consider that the grape culture was a profitable undertaking in this State.

Mr. Parsons', of Detroit, attention had been paid principally to pears, grapes, and strawberries, and it has been attended with some success, which he attributed in a very large degree to the proper cultivation of the ground. He first thoroughly drained the ground, and here he would say he considered no amount of cultivation without draining, in clay ground, would produce a good crop. He then trenched deeply, giving a large basis at the bottom of bone and refuse, followed with a mixture of manure. With him the "Hartford Prolific" grape was the most successful and pleasant to the palate. In relation to pears, it was the same as with the grape; they must have thorough drainage. He believed the pear could be made a source of profit, but the great point was to get the tree out. There was one ingredient which he had availed himself of, which others had not. He had put a large quantity of street sweepings on his land, and that possibly had had a beneficial effect in opening the stiff clay ground of his land.

Mr. Adair, of Detroit, thought the whole secret was in good soil, good cultivation, and good drainage. They were deterred by expense, but it should be known that a soil that would grow good corn would grow good grapes.

Mr. Greene supported this, and advocated thorough manuring.

Mr. Taft thought that if drains were properly put in in clay ground, there would be no necessity to introduce sand or gravel to open the soil.

Mr. De Garmo, Milford, considered the worm the greatest pest in the raising of apples, and had heard of only one remedy, that of turning in the hogs, which he thought was an excellent one, and he would advise all his brother farmers to turn in the hogs, and if possible get them from Oakland county.

Mr. Johnstone, Secretary, spoke of another remedy told him for the apple worm, which was to pick up the fallen apples from the ground, so that the worm could not enter the ground, and propa-

gate, but unless the whole neighborhood adopted the same plan, it would not be apt to be of much value.

Mr. Allen, of Plymouth, closed the discussion in a few general remarks on fruit and the variety which gave the most profitable yield, as also the advisability of thorough drainage.

Prof. Welch moved that a committee of five be appointed to prepare a list of pears for cultivation, and that Mr. Lyon be chairman. The resolution was adopted.

The meeting then adjourned.

For the Michigan Farmer.

#### THE VITALITY AND PLANTING OF FRUIT TREES.

ROLLIN, Mich., Feb. 1864.

MESSRS. EDITORS:—I hereby acknowledge my indebtedness to the agricultural community by giving a few hints on setting fruit trees: The proper season, manner of setting, &c., and my reasons therefore. Many of us remember that from eight to twelve years ago, we had some very severe cold weather, which in southern Michigan killed a great many fruit trees.

The next spring while examining my apple trees by cutting through the bark on large branches, I found the inside of bark, and outside of wood were brown as though heated by fire. At first I thought that those most thrifty had probably suffered most, and that those which had fruited heavily the previous summer would suffer least. But to my then surprise, on close examination, I found throughout the orchard that those trees which had fruited heaviest were most injured, some of them being entirely killed, and some that were not killed outright have been giving out almost annually every since, two failed last season, one of which I remember to have examined and found the bark and wood colored as before remarked, I thought it would die, but it continued to bear fruit to pretty good perfection until last season.

The reason why—"Vital energy enables us to withstand the cold." Just so with the fruit tree, when its vital powers have been taxed to the utmost in producing fruit, the vitality of the tree is left below par, consequently it is less able to withstand the cold. Again by removing a tree from where it grew and obtained its life, its vitality is of course weakened. Some four years ago I set 400 apple trees in the fall. They were taken up in good season and in a favorable time, were taken up in the nursery in the afternoon, removed in the evening well covered up and by 9 o'clock the next morning the leaves had all been stripped off and the roots well heeled in. The holes had been previously dug, and with the help

of another no time was lost in setting. I placed every root myself and believe they were well set. Having set several orchards, at different times and seasons, some trees even as late in the spring as when in the full bloom, which matured fruit the first season and all did well. I thought I knew how to do it up right.

But they did badly. There was some very cold weather in the early part of the winter following, and the trees being of low vitality, having partaken of no food for several days and nearly so for weeks, about 3-4 of them froze to death nearly to the ground; (the roots and stumps remaining green, which would not have been the case if the fault was in setting.) Now having become satisfied that I have found out the true cause of the failure above referred to, I would advise all who have not already a supply, to set about it at once, get ready as early in the spring as the ground will admit, prepare as for a first rate crop of corn, set the trees about 30 feet distant in squares, or if ingenious you can get more trees on the same ground by setting them in rows three ways which will bring them in the shape of Bee-comb or hexagonal, in setting have the holes large and deep enough so that all the roots may be placed natural, then place the tree just as deep in the ground as it grew in the nursery, leaning it to the south west about an inch to every foot in height, fill up with well pulverized soil carefully working it in among the fine roots, until the surface is a little elevated, pack moderately, mulch with rotten sawdust, shavings or pretty well rotted straw, and keep it so, to encourage fine roots near the surface, cultivate with some hood crop until the trees begin to bear, say a bushel a piece or so, keeping the soil all the time manured so as to be in first rate condition for a crop of corn, carefully hoe around the trees every year as you would a hill of corn, but do not plow near or deep enough to break the roots. When the orchard is well in bearing, seed it down to white clover and timothy or June grass or anything else but red clover, (which is as bad in an orchard as sorrel in a cornfield,) after which never plow it, but keep young or small hogs in it when convenient to eat up wind-fall apples, which will very much prevent the ravages of the Curculio, keep the ground pretty well covered under the trees as great a breadth as the top covers with some kind of mulch, so as to prevent the turf from getting too firm and strong.

Again, for reasons before given, never set fruit trees in the fall, better give the land another plowing and harrowing and wait until spring.—Those who follow my advise will succeed pretty well at least. Let those who know a better way, follow it, and if the please make it public.

Other agricultural papers will please copy if approved.

W.M. BEAL.

For the Michigan Farmer.

### NATIVE THORN FOR HEDGES.

LITTLE PRAIRIE RONDE, Mich.

MESSRS. EDITORS:—I do not wonder at the prevalence of the prejudice against what is called "book-farming," when so many writers assume the prerogative of teachers touching operations, and methods of which they have no practical knowledge.

Theory is good as suggestion, but let it confine itself to its own province, and not put on the air and assurance of demonstrated facts. This is the folly of too many writers, not having done the thing they presume to teach, how it may be done, while a practical test of their theories, before giving them out as rules of action for others would sure them of an immensity of silly conceit, save pen and ink, the printers futile labors, and the scorn of practical men.

The truth of the foregoing was never more apparent than from reading the article in the January *Farmer*, "cultivation of the native thorn for hedges."

The errors of this writer I propose to notice at some length, as also to give the result of my experience with the different kinds of thorn, their management, &c.

The first error of moment in Mr. H's statement is that stock will not browse our native thorn.

This I would have thought a firm-slip but for its reiteration.

Who has not seen by the road side in all parts of the State specimens of this shrub, that have been eaten off by sheep and cattle until they are so dense a bird could scarcely find room to nest? No one that has had his eyes open to this subject surely.

But the most fatal errors, most sure to lead to disappointment in practice, is in regard to propagating from seed. He says if planted in the fall, "They will come up in abundance if sown thick, next season," &c. I can only account for this statement upon the hypothesis that it seemed so plausible in theory to the author that it should be so, he ventured to assume it would be so, while a little practice would have demonstrated its falsity.

Of all the varieties of native thorn with which I am familiar, some half a dozen. I have never found one the seed of which could be, by any known process, made to grow in less than from three to five years.

In my first hedging experiments, years ago, I gathered bushels of the apples—all the different sorts, year after year, planted them whole, crushed and washed out of the pomace mixed with sand, and submitted to the action of frost, planted in

seed-bed and drills, but never a plant came up the first year, and but few after three years.

The reason is obvious from an examination of the pit. This is a hard bone-like substance that requires the action of the elements for several years to soften it and liberate the germ.

Most of stone fruit seed have a suture—consist of two bivalves, that the frost will have the effect upon to separate. The seed of the thorn has no such seams. Take a hammer and break it, it breaks at all angles, and the truth of the above is apparent. Hence, the long time it requires in the process of nature to grow.

Again Mr. H. recommends plowing a furrow, and planting the seed where the hedge is to grow, and if they do not come up thick enough, to sow again, or plant in.

Now, no man with the least horticultural knowledge would recommend such a course, admitting the seed to grow readily.

And why? In the first place it would be twice the labor to tend the small plants in the continuous row that they would require in a seed-bed. Secondly. The only way to grow a hedge with any promise of success is to have your plants of uniform size and stand at equal distances, which can only be secured by the most careful assortment and transplanting, and where a plant may chance to die, it is necessary to fill in with some of the strongest that have been set apart for that purpose, which should be done the earliest practical moment, as every nurseryman knows will how difficult it is to make tree grow in nursery row, when the other trees have a year or two the start.

The only variety of the thorn I know of whose seed will grow as readily as an apple seed, is the *Craetagus Cordata*—the Washington, or Virginia Thorn. This is indigenous, I believe nowhere north of the line of the Ohio river—of this thorn I have some two hundred and fifty rods.

In some respects our native thorn would be preferable, if it could be as readily propagated—it is more stocky, and the thorns on some kinds are stronger. Otherwise the plants are quite similar, and I find the Virginia Thorn entirely hardy, at least as hardy as the apple in the same situation, and eminently suited for the purpose of hedging.

I have few rods of hedge consisting of several varieties of our native thorn. That is promising, the plants for which were produced by root-grafting a process, however, rather tedious for extensive practice.

I believe that in the hands of a skillful propagator this shrub might be grown from cuttings, the same as the quince. In casual experiments

with it I have had it callus readily in damp sand, but so far I have failed to elicit roots, wanting no doubt the knowledge of the exquisite conditions for success.

For the benefit of such as may desire to embark in hedging I will briefly suggest the method my experience indicates as the most certain of success.

Grow the plants two years in seed bed assort and plant eight inches distant in well prepared ground. Cultivate thoroughly for several years, when the hedge is some seven feet high it should be plashed when the work is done.

This plashing is a very important part in growing a good thorn hedge, and will be described. It is done by first driving stakes in the row two feet apart, leaving them four feet high, or four and a half according to the height of the plants.

Then by commencing at one end of the hedge-row and cutting the plants, say half off at the ground, they are bent and woven in the stakes at an angle of forty-five degrees.

This process, by bringing the bodies of the plants near together stops the holes, while the upright growth from the now partly horizontal stems binds the whole fence into an inseparable net-work.

The few experiments made in this country as yet in growing live fences have been mostly made by men after Mr. H's own heart or at least they have very generally practiced after his theory—men who, if they did the work of sowing the seed, or setting the plants, did it grudgingly as if already prescient of failure, then let them to tend, and take care of themselves, to come back some day in the vague hope of finding a beautiful impassable screen, that should defy the most ferocious of the homeless swine that prowl at freedom in the highway, to whom a hedge is less formidable than to even the "Bulls of Bashan."

But alas, for all human expectations, a very few years discloses the fact to the most obtuse observer, that a hedge is a nuisance, which it verily is and must be in the hands of such men for all time.

Albeit, this day and generation is not yet ripe to make the use and beauty of the hedge available to every extent, at least not in this country. Not one man in a hundred is such a cultivator as to make possible, and anything less than success is utter failure.

Let me suggest in closing not to this author alone, but to others who use the pen more often than they do the hoe, get all the school-boy benefit you please, if intellectual exercise out of this fine writing, gentlemen, but pray do not hurry your crude theories into print for the benefit of others more ignorant (?) than yourselves, wait at

least until you have sifted them in the light of practical experiment. Very truly, &c.

B. HATHAWAY.

#### Our Fruit Prospects.

The St. Joseph Traveller gives the following insight into the state of the fruit crop in that locality:

We wish to call the attention of our readers in this vicinity again to the fact that we are to have the monopoly of the fruit trade of the North-West, if not for all time to come, at least till such time as fruit growers in other sections can set new orchards and get them into a bearing condition. The injury to fruit trees—we speak particularly of the peach tree—in other fruit-growing sections we have competed with St. Joseph in the fruit market, has been very great according to all accounts. Without any question the trees are for the most part killed throughout Southern Illinois. The nurseries will have been destroyed also. The difficulty of getting trees from eastern nurseries will be so great as to prevent any very general resetting of orchards during the next year. Not very much will be done in that line until the spring of 1865. Then it will be five years before orchards set at that time will bear very largely. From present appearances then, it is safe to conclude that St. Joseph will be the only locality represented very extensively in the fruit market of the North West for at least five years. After that time, even if the supply from other quarters should be as great as it has been for some years past, the prospects of peach growers here will be as flattering as they have been for the years gone by. Those who have been setting out orchards during the past two or three years and now have them advanced to the bearing state, certainly have a most cheering prospect before them for the next few years, while those who have contemplated making improvements in that direction, have even greater inducements to go on than before the recent cold weather. There are a great many fruit trees in the vicinity of St. Joseph, still there are hundreds of acres of excellent land within a few miles of this harbor and clearly under the modifying influence of the lake thermally, which ought to be covered with fruit trees, grape vines, strawberry vines, raspberry bushes, &c.

No better investment can be made of surplus capital than in the purchase of these lands and their cultivation in the various kinds of fruit adapted to this latitude. The facts in the case ought to be kept prominently before the minds of not only of our citizens, but also of all those either east or west who wish to settle in a fruit

growing country, where immunity from destructive frosts, excellent adaption soil of nearness to good market and facility of transportation, are so admirably combined as they are here. With a proper use of these facts, there may be unfolded for St. Joseph a future fulfilling the brightest hopes of her citizens. The next five years ought to double the population and greatly increase the valuation of the property, real and personal, of the town. We hope the efforts of our citizens to increase the amount of orcharding in the vicinity will by no means be intermitted. The great argument in favor of it is *it will pay.*

#### Fruit Trees on Low Ground.

A gentleman set apple trees on a low spot of ground, near his dwelling. All died except those that were set near the top of the ground and had earth wheeled in around them to make a mound. In this manner the standing water of wet seasons was turned away from immediate contact with the trees. This spot is difficult of drainage, but the owner thinks he will have no trouble in growing trees on it, by setting them on the surface, and filling in soil over the roots, making a mound to turn away the water. We recollect of reading some years ago, of a New England farmer having good success in growing apples on low ground, by cutting off the tap root of the young tree planting upon the surface and covering with the soil derived from between the rows of trees. Perhaps it would be worthy of trial those having wet grounds, very difficult to drain.

#### Grapes—Their Order of Ripening.

A writer in the *Horticulturist* gives the following statement of the order of ripening of his grapes in 1862. The location is not given. If this experience shall agree with that of others, it will be easy to determine what varieties to select for the higher latitudes, where the latter varieties do not ripen well:

Sept. 10 1862.	Hartford Prolific, ripe.
" 15 "	Oreveling.
" 15 "	Early N. Muscadine.
" 16 "	Clinton.
" 20 "	Delaware.
" 26 "	Perkins
" 24 "	Catawba, <i>a few bunches only.</i>
" 26 "	Concord.
" 26 "	Allen's Hybrid.
" 26 "	Hyde's Eliza.
" 30 "	Isabella, fully ripe.
Oct. 5 "	To Kalon.
" 7 "	Carrigues.
" 16 "	Rebecca.
Nov. 2 "	Anna, not ripe.
" 2 "	American Hamburg, hard and worthless.
" 2 "	Diana, not ripe.

#### HOW DEEP SHALL WE PLOW?

A Correspondent of the N. H. Journal of Agriculture says:—I have noticed at various times in the *Journal*, within a few months past, different opinions expressed by correspondents, as to the advantage of more or less deep ploughing, and in connection therewith different depths of depositing the manure applied to the land. I have given some thought to the subject, and have at different times tried several experiments, though in no very methodical way, and now propose to offer you a few remarks as the result of my observation and reflection.

The end had in view must be taken into consideration. If a farmer's object in planting a piece of land is to obtain the greatest immediate return for his year's work and the value of his manure, it seems altogether most probable that he would do so by rather shallow ploughing, say four or five inches deep, the manure being first spread upon the surface and turned under to that depth. It would thus be within the reach of the horizontal roots, which are usually the greatest in number and inclined to spread the most rapidly; and it would also be more subject, than if buried more deeply, to the action of the atmosphere and of heat and moisture so that its decomposition to a state for most rapidly affording nourishment to the crop would be quicker and more thorough. But in proportion to this, is the quickness and thoroughness of the exhaustion of its fertilizing properties; and while the present benefit is greater, the advantage for a future crop is lessened, and may be little or nothing. There is, moreover, a danger, in case a very dry season should come after the growing of the crop was well established. In this case the decomposition of the manure would be greatly, or may be totally, checked, and at the same time the solution of its fertilizing principles, for want of moisture. The more superficial and horizontal roots, the growth of which had been particularly promoted by abundance of food and stimulants, would give little or no support to the increase of the plants, and the deeper growing ones, though they might find more moisture, would derive little or no immediate benefit from the manure above them, and thus the crop would be sure to suffer greatly.

If now, a portion of the manure had been deposited more deeply, say at 7, 8 or 9 inches, it would have been more slowly, and less affected by the drought, and would have afforded a kindly supply of nourishment to the crop through its deeper and more perpendicular roots, and thus the hazard of a failure would have been lessened or promoted.

Moreover, in case of a favorable season, so that the bulk of the nourishment of the crop should be supplied by the more quickly growing, superficial roots, the deeper roots would exhaust less of the deeply deposited manure, and it would remain in the ground as a reserve for the next year, ensuring a more permanent fertility to the ground.

This last state seems to be obtained by deep ploughing. As the furrow is turned over, in swardland, the manure is deposited in the furrow, pretty uniformly, if in a mellow soil, under cultivation, through the breaking and crumbling of the furrow slice, while a portion goes to the bottom of the furrow, some part is generally lodged

upon the shelving surface of the foregoing surrow. In the latter case there is direct necessity for the supply of manure reaches to the deep and horizontal roots of the crop, in the former case a supply of nourishment is afforded at starting to the superficial roots by the crumbling and rotting surface of the overturned sod, while the decomposition of the original top sward by its fermentation with the underlying manure, and this manure itself affords a copious supply to the deeper roots later in the season, or in case of drouth; while after all in both cases, there will be a reserve of partly changed and unexhausted manure for the benefit of future crops, and if the supply be removed seasonably, for the continued increase of the fertility of the soil.

The conclusion seems to be, that for a man who hires a field for tillage for a year, it is best to plough and cover his manure shallow, while for one who cultivates his own land, and wishes a secure and steady compensation, so far as the question has been considered here, deeper ploughing would seem the best.

It must be considered also that there are many elements of fertility in most natural soils when acted upon by the atmosphere, and that deep ploughing, by bringing up those influences, portions of the soil, which they would otherwise not reach, increases after a time the fertility of his land independently of the manure he applies to it.

I have seen several accounts of the crops derived from pieces of land plowed and manured at different depths, but do not now recollect any giving an account of the subsequent crops from the same land for two or three years, without additional manure, or even with, and yet such an account seems to be necessary, before the question can be practically settled. S. W.

#### A Dose from the Doctor.

HILLSDALE, Feb. 3d, 1864.

MESSRS. EDITORS:—A short time since while soliciting a subscriber for your Journal, a gentleman stepped up and expressed great surprise that I should be soliciting for such a paper as the Michigan Farmer, and politely asked that he might introduce me to a paper that was a paper, and mentioned the name of some one I did not quite understand at the time. But I think it was published by the Farmers Club in the city of New York, the reports of which are published in the New York Tribune. I told him I would first support our own State paper, and then if I had occasion I would take one from an other State, besides I did not think much of those reports and looked upon them as but little else than milk and water, and, to prove my assertions, I here recite the Tribune's own words published last week:

"At the weekly meeting of the Fruit Growers' Club, Jan. 21, after the usual amount of solemn ceremony, of mounting some one in chair upon a box to make him little more conspicuous for others to talk at, there was another usual solemn ceremony of tasting apples, which is performed with gravity, but to what effect? If two sorts

were placed before the Club, and each person asked to express his opinion as to which is best, then some information might be obtained. Sometimes that is the case, and sometimes it is not; and sometimes the tasting ceremony appears very much like a solemn farce. So much by way of a hint to similar meetings. Let the meeting be orderly, but do not give occasion to an observer to say, "What a solemn-looking set of owls!" But the most tiresome thing about such meetings, and what generally proves to be fatal to all similar organizations, is the eternal talker; one who feels it to be his especial duty to fill up all the time with talk—with words that either express his one idea, or no idea that is of any benefit to any others. We omit in this report—and, indeed, in all of our reports—a good deal of this kind of "empty sound," that is "like a tinkling cymbal."

I have said this much to show you what we have to contend with when soliciting subscriptions for our own Journal.

Another wanted me to stop my Farmer and take the Rural New Yorker, (an excellent paper.) But cannot we have one here in Michigan just as good; have we not as smart men and editors; and do we not raise the best wheat, wool, fruit &c. &c., in the United States; and have we not the first Agricultural College, the best State University, and the best school system on this side of the Atlantic; and cannot we say have an agricultural journal too and one much better suited to our wants, than a paper from any other State can be.

When will these croakers cease and learn that charity begins at home, and that as a matter of honor it is their first business to support their home institutions, (and the home institution will support them,) let this principal be carried out, and in short, instead of the Farmers Club plodding over the sands of New Jersey and the Oyster shells of Long Island, or a "Rural New Yorker," we will have a live Rural Michigander coming to us weekly, and far more precious than the gold of Ophir. D. BEEBE.

**A MAMMOTH PIG—THE BIGGEST EVER FATTED.**—There is now in New York a hog, three years old last April, raised by John W. Copeman, in Cayuga county, and fattened to its present enormous size by A. Benham, of Dryden, Tompkins county, N. Y. This hog, in May, 1863, weighed 1,120 pounds. In September he weighed 1,249 pounds. In October, 1,276 pounds. In December he weighed 1,340 pounds, and has been growing rapidly since, and will probably weigh 1,400 pounds to day. It is to be hoped that the owner will be able to make arrangements to have this monster publicly exhibited before he is made into pork. His breed is a cross of Leicester and Suffolk, with a slight cross of Berkshire.

**NATIVE WINE MAKING.**—The Lake Erie wine crop in the vicinity of Sandusky is estimated at 200,000 gallons in 1863, and its value \$400,000.—It is expected to be more than doubled in 1864.

## THE MICHIGAN FARMER.

DETROIT, MARCH, 1864.

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## TO POSTMASTERS.

We often receive returned papers, with merely the name of the subscriber upon them, and not the town, in such cases it is difficult to find them, as we are obliged to go over 200 pages of names. Will they please to add the name of the Post Office.

"Postmasters are responsible for the subscription of a newspaper or magazine, as long as they allow it to be received at their office, after it is uncalled for, or refused by the person to whom it is directed. The Postmaster General requires that a written note shall be sent to every publisher, that his paper of works lie dead in that office."

## WOOL SINCE 1860.

After the valuable address of Mr. Starkweather, R. F. Johnstone, Esq., Secretary, took up the subject from 1860, and gave the following able extract since that date.—W. S. B.

Mr. Johnstone said: The gentleman who has just addressed you, has given a very clear statement relative to wool, up to 1860, and till that date, his statistics and the history of wool are correct. But it becomes my duty to take up the subject where he has left off, for since 1860 there have been such radical changes in every thing connected with wool, that the discussion would be incomplete if we ignored the history of wool since 1860. I have made no notes on the subject for want of time, and the business of the society is so pressing, that I shall only have opportunity to say a few words, by way of calling attention to the present position of wool, and its prospects for the future, giving to you rather the data on which each of you may base your own action as woolgrowers than undertaking to predicate any special results.

There are three elements that have been at work since 1860, affecting materially the wool and woollen manufacturing interests.

The first is the change in the tariff made by the law passed in 1861 March 2, and the amendments made by the law of 1862.

The second is the necessity caused by the civil war, and the loss of a large amount of wool producing territory.

Third is the high rate of exchange, which has been so much protection to the manufacturers, and which has acted as a stimulus in addition to the tariff of '61 and '62.

It is well known that the tariff previous to the enactment of law of 1861, rendered the manufacture of wool in this country very uncertain in the remuneration of the manufacturer, and consequently caused great fluctuations in the prices, and there was probably no article of farm produce that was so completely under the command of wise or unwise legislation as wool, and which was so liable to be effected beneficially or injuriously. In fact previous to 1861, nearly every woollen cloth manufactory had been closed, or

was held by its owners simply with the hope that a change might occur in Congress so that the investment could eventually pay. The tariff of 1857, provided that woollen manufacturers should be taxed 24 per cent on their value, which was fixed at the last port at which they were exported. Wool of a less value than 18 cents was allowed to come in free, all other to pay 24 per cent on its invoice at the port of shipment. By this it will be seen that a yard of cloth of the value of \$1.00 in Liverpool, Marseilles, or Hamburg, had only 24 cents added to its value for revenue purposes; this light tax had the same effect on certain description of goods, as if there had been none, for under it so great was the difference in the cost of manufacture, that American manufacturers were easily undersold, and driven out of our own markets. In 1861, the law generally known as the Morell tariff was enacted on the 2d of March; in preparation for it the stocks of manufactures of all kinds imported had been enormous, and hence the effects of that law of itself could hardly be felt for a season, and in truth its effect as a measure by itself never fully got at work, for the war came on and gave it such aid that up to this day it is impossible to say what changes in the wool business the Morell tariff would have effected alone. A brief glance at its provisions, however, will readily indicate that the wool growing interest would have soon felt its beneficial influence, without the changes made by the war. It provided that raw wool of a less value than 18 cents per pound should pay a duty of 5 per cent ad valorem, reckoning the price at its place of shipment, or in other words 100 pounds of wool worth 10 cents per pound at the Cape of Good Hope, would pay 50 cents of duty. Wool 18 cents per pound a duty of 10 per cent ad valorem, that is 100 pounds would pay 90 cents. Wool over 18 cents and not over 24 cents, 3 cents per pound; and wool over 24 cents per pound, 9 cents per pound. But the chief

principle of the bill was to give an adequate opportunity to manufacturers, for it was readily seen the duties might be piled knee deep on raw wool, and as long as there were no manufacturers at home, and no export demand from abroad, the wool grower could not be any better off than he was before, hence nearly all woollen manufactures were taxed 12 cents per pound on their weight, and 25 per cent. on their value, or in other words, 100 yards of cloth worth \$1.00 per yard in Liverpool and weighing 75 pounds, which under the old law paid simply an ad valorem duty of 24 per cent on its value or a gross duty of \$24, became liable to pay a gross amount of \$34.

The amended law of 1862, made a slight alteration which I think was rather in favor of the manufacturers, and which but slightly affected woolgrowers. It made foreign wool 18cts and under pay a duty of 5 per cent ad valorem; it retained the wool between 18 and 24 cents at 3 cts. per pound, and over 24 cents at 9 cents, but it raised the duty on manufactured goods from 12 cents per pound and 25 per cent ad valorem to 18 cents per pound and 30 per cent ad valorem, or in other words, the 100 yards of cloth weighing 75 pounds, and worth \$1.00 per yard in the foreign market, that in 1859 paid \$24 of duty, and in 1861, paid \$34 of duty, now pays \$43.50. In addition to this, it also comes under the effect of the difference of exchange, for the freight, and charges and impost really makes the yard of cloth worth \$1.50 in gold in our market, and taking exchange at 1.70, it makes foreign cloth is so enhanced that it has to be sold in our market at not less than \$2.55. You will readily see, therefore, that whilst our manufacturer has an advantage of at least \$1.55 on the price of cloth over the foreign manufacturer, he is not likely to slacken in his efforts to keep the market supplied. It will be seen also, that high rates for wool will also depend somewhat on the rates of exchange; a fall from 1.70 to 1.40, would make a difference to the manufacturer of 60 cents on a yard of cloth, or reduce the price of the foreign yard of cloth to the consumer from \$2.55 to \$1.95. You will see therefore on what a slender thread hang the prices of wools, and how little any faithful man acquainted with the whole subject can say truthfully, about the future of this important crop.

But it is claimed that the supply is not equal to the demand, and that the increase of consumption is much greater than the increase of production. Let us examine this part of the subject, as briefly as possible. The requirements of the United States for consumption is estimated to be at the rate of five pounds per head for the population. Some authorities make it but four pounds per head. In a population of the Loyal States of 25 millions the total consumption would be 125

millions of pounds, add to this 50 millions of lbs. that may be consumed for army purposes, and we have a total consumption to supply of 175 millions of pounds. This amount you will perceive is the extreme, now where does this supply come from. In 1860 it was estimated that the whole consumption of wool was but 130 millions of pounds, and that the home production of wool in all the States was 60 millions. Of this but ten millions were grown in the eleven disloyal States. But since 1860 there has been, owing to the causes I have before referred to, a very great increase in wool production. The Commissioner of Agriculture estimated the wool clip of 1863, at 82 1/4 millions of pounds, showing an increase up to that year of over 30 millions more than was produced in the loyal States in 1860. There are two causes efficient in the production of an increase of wool; to wit, the increase of the numbers of sheep and the increase of the amount of wool produced by each head, owing to the superior care the flock masters are bestowing upon them. The increase during the past five years cannot be better exemplified than by reference to what has been done in our own State of Michigan.

In 1860 the amount of wool produced by Michigan was known to be but a little over four millions of pounds produced from one and a half million of sheep. These sheep produced then at the average rate of 2.60 pounds per head. In 1862 it was known from well authenticated data gathered from various sources, and which proved each other, that the clip yielded 6 1-2 millions of pounds. Now this enormous increase of 2 1-2 millions of pounds in two years had taken place before the present interest was felt in wool, and which was not manifested till the latter part of the year 1862 and the beginning of 1863. If we take the ordinary increase as ruling in the spring of 1863, as the refusal to sell to the drover and the butcher only began about first of November of 1862, and make at the same time some allowance for the better feed given by flock masters in that winter, we have every reason to estimate that the clip of Michigan in 1863 was between 8 1-2 and 9 millions of pounds. In fact, if we estimate that the 6 1-2 millions of pounds of wool of 1862 came from 2,200,000 sheep producing at an average of 3 pounds per head, and that the increase of the flocks was only at the rate of 25 per cent; and that in 1863, the production of wool in Michigan per head was at the rate of 3.60 per head, (which is somewhat less than is allowed by the Commissioner of the Agricultural Department for that year, see p. 551 of his report for 1862,) then the wool clip of this State would have been last June 9,800,000 pounds! This enormous increase was therefore the result of half a year's care,

and we may well conclude that the wool clip of Michigan, when the accumulated care of the latter part of 1862 and the whole of 1863 come to be applied to the clip of 1864, will roll the amount up to the vast sum of 12 millions of pounds. Estimating the increase of the flocks in Michigan at only 25 per cent, that is that every flock of 200 sheep in 1863 contained only 100 ewes, and that these ewes gave but an increase of 50 lambs, we should now have 3,457,500 head of sheep in the State, and deducting from this 200,000 for sales, there would still be 3,237,500 which at an average of 3 1-2 pounds per head would make the coming clip equal to 11,331,250 pounds!

This estimate, I have every reason to believe is not overstrained, and if correct with regard to Michigan, must we not expect that it holds good throughout the whole of the loyal States where wool is produced? It is not too much therefore to estimate the coming clip of wool that will be ready for market by the latter part of July, at fully one hundred millions of pounds, and I think it will be rather over than under that amount. It is supposed that nearly one third of last year's clip is yet on hand unconsumed, but there is also one third of the year to consume that portion of the produce, so that it is not likely a very large amount of the old clip of 1863 can be on hand when the clip of '64 comes into market.

In addition however to our own supplies, there has been brought into the country from abroad, forty millions of pounds of foreign wool during the last year. It will be seen therefore that if we have the same supply of foreign wool next year, that we shall have fully one hundred and forty millions pounds of wool to supply the demand of consumers, leaving but about twenty to twenty-five millions of pounds to be supplied by the import of manufactured goods.

It has been said that the want of cotton must surely have the effect of creating a still greater advance in wool, and also a much greater consumption. I fear that wool growers who base their hopes of high rates on the scarcity of cotton will be disappointed. The extreme point in the dearth of cotton seems to have been passed, and I learn that not only is cotton more plenty than it was six months ago, but also that its price is much less than it was. At the present time cotton sells at 75 to 80 cents, that a year ago was held at 90 cents to one dollar per pound. Besides the cotton mills of Great Britain are getting larger supplies from other countries than this. In Liverpool, a great company, entitled the Cotton Supply Association, have spent enormous sums, and have made the greatest exertions to promote the growth of cotton in every part

of the world where the climate gave the least hope of producing the qualities needed by their manufacturers. Thousands of tons of seed have been distributed, and the whole force of the diplomatic and consular agents of that great commercial empire has been enlisted in the task of encouraging by every possible means the growth of that great staple. It now looks to me that the supply of that article will begin after this year to increase so that the ordinary demand will be supplied at prices not so low as we have known them, but certainly not such as to encourage the hope that the price of wool will be effected.

If therefore, we glance over the whole subject of the prospects of wool in all its length and breadth in this country, at the present time, and take in at once, the uncertain state of the exchanges, the enormous increase in its production, and the unstable state of the military position, it would be unwise at the present time to predicate what will be the future of wool, or even to attempt any assertion that would be of the least value with regard to the clip of 1864. We may note however, that since last December, it has been impossible to cause any advance in prices and it is very certain that the manufacturers themselves, who have not laid up any large supply, are perfectly content to manage their business, so that they supply orders for goods as fast as received, and only come into market for the material, when sure that their contracts will bear them out in making such purchases as will supply their wants from week to week. Under this state of things, wool growers must take the market as it comes, and use their own judgment as to when is the best time to sell. No man can do their business for them. Many of them have entered into the field of speculation for the first time, and "neither a prophet nor the son of a prophet could aid them," for the market and the prices are not at present governed by the laws of trade, but by the incident of war, and the result of a campaign is of more importance in determining prices, than either the supply or the demand.

**CURCULIO—A NEW REMEDY.**—A. P. Richardson, Norfolk county, Massachusetts, thinks that his success in preventing the attacks of the curculio is such as to warrant him in suggesting his plan to others. As soon as the trees blossom, their trunks are surrounded by cotton saturated with kerosene oil. This is placed a foot or two from the ground, and the oil is renewed once or twice a week, as long as the curculio continues to appear.

— An eight-day clock whose machinery is made from soup bones is among the novelties of the Cincinnati sanitary fair.

Proceedings of the Michigan State Agricultural Society.

## DISCUSSION RELATIVE TO THE SORG-HUM AND SUGAR MANUFACTURE

Wednesday, February 10th.

Mr. Taft, of Plymouth, though not prepared for a lengthy discourse, had considerable experience in the manufacture of sugar from the cane. Six years ago one of his neighbors conceived the idea of entering upon sugar raising extensively. He planted about twenty acres, but only five of which he cultivated properly. He went on and produced an article which was pronounced worthless, but he (Mr. Taft,) thought he discovered enough from the experiment to satisfy him that, with proper facilities, a good article of sugar could be manufactured. He therefore went on experimenting till within the last year he had succeeded in producing a good article. He considered that the fodder secured from the cane amply paid for the putting of the cane through the mill. The greatest difficulty with farmers was, that they planted too much. No one should attempt more than half an acre to commence on, and the cane should be carefully handled and cultivated. When the stalk can be secured about ripe, then a good article of syrup can be had, but if otherwise, a poor article of syrup must be the consequence. With regard to the ultimate result he had no doubt. He believed that Michigan was destined to become a great sugar producing State, and he could see nothing about the whole growth that could be considered discouragingly. Other crops would fail as well as the cane, and we should not be disappointed at any occasional failure of a plant not wholly, as yet, adapted to our climate.

In answer to a question he said he thought the land best adapted for the growth of cane was that which produced the best corn. He did not consider a frequent renewal of the seed necessary.

To Mr. Lyon—I have produced 250 gallons on an acre, and have never produced less than 100 gallons, which I sold at fifty cents per gallon.

Mr. Baxter had some difficulty in accommodating himself to the taste of the syrup, yet he thought that those who could adapt themselves to the use of tobacco need not despair.

Mr. Taft said the frost would not kill the cane nearly as quick as it would corn, but when it freezes hard, the cane would become porous, and the juice turn sour. He would not strip the cane when it stood in stocks in the field, but would not lay it up with the leaves on.

Mr. Richard, of Tecumseh, exhibited several specimens of sugar manufactured by him, and explained his process of cultivation and manufacture. He considered that the question of raising the

cane was firmly established in the affirmative. Every man who could raise an ordinary crop could raise cane. The average crop of syrup is safely estimated at 160 gallons per acre, which sells readily at 75 cents per gallon, the fodder could be estimated at \$10 more, making a total of \$130. The expense of raising would only reach \$52 70 per acre, thus leaving a net profit of \$77 30. The State of Michigan is now ahead of Ohio, Indiana, and Illinois in the growth of sugar. We have competed with them, and always successfully. All he thought now wanting was the enlistment of some scientific process to bring the manufacture to a state of perfection. His experience led him to the belief that if the State offered a premium of \$1,000 for a perfected scientific plan, it would be the most judicious expenditure of money that could be made.

Mr. Weeks, of Napoleon, also exhibited several specimens of syrup and sugar. He said that one gallon of the syrup should produce from four to six pounds of sugar.

Mr. Clizbee, of Quincy, thought the seed should not be planted too deep, probably not more than half an inch, and then rolled.

Mr. Bodwell, of Ann Arbor, had not grown much cane, but had manufactured considerably. He had worked cane that had produced two hundred and fifty gallons to the acre.

An acre of ground that would yield fifty bushels of corn would produce over two hundred gallons of syrup. He gave preference to the cane crop over the corn, making an estimate somewhat similar to that of Mr. Richards. The fodder was most valuable for cattle. He did not think the crop exhausted the ground more than corn. He preferred a yellow, gravelly, sandy soil for growing the cane. The finest cane he ever grew was on soil from which a crop of corn had been gathered. He was doubtful whether steeping the seed before planting, hastened its germination.

Mr. Emery, editor of the *Prairie Farmer*, said that a person in Nebraska had patented a process for granulating the sugar, from syrup, in a very short time, but did not understand the process.

On motion of Mr. Baxter, it was

*Resolved*, That the State society be requested to offer an increased premium for the best specimens of sorghum-syrup and sugar; accompanied with full written instruction of the variety of canes from which it was produced, and the process of manufacture. Adopted.

*Resolved*, That the State society be requested to use their influence to secure action on the part of the State of Michigan to encourage the manufacture of sorghum syrups and sugars. Adopted.

Mr. Howard, of the *Boston Cultivator*, made a few remarks on the pleasure it gave him to see the progress the Northwestern country had made

in the manufacture of sugar. He believed it to be a fixed fact, beyond a doubt, that sugar could be successfully raised in these States. In the Eastern States its manufacture was not extensive, as tobacco culture was found to be more profitable.

After a desultory conversation, which lasted some time, the meeting adjourned.

## LECTURE ON MARSH MUCK, COMPOSTS, AND EXPERIMENTS WITH THE SAME AT THE AGRICULTURAL COLLEGE.

BY PROF. KEDZIE, OF THE STATE AGRICULTURAL  
COLLEGE.

Wednesday evening.

*Mr. President and Gentlemen of the Michigan State Agricultural Society:*

Upon no subject connected with agriculture has there been a wider divergence of views than upon the value of muck in practical farming. One class speaks of it as "nothing but a mass of vegetable humus, leached to the last degree of exhaustion by the action of water, and abounding in no essential ingredient, except it be carbonic acid, capable of aiding in plant growth," (Ag. of Mass., 1855, p. 307.)—while another class proclaims that "gēne or muck is as essential to plants as is food to animals, so far as nourishment is derived from the soil, gēne is the food of plants." (Dana p. 75.)

Where theorists differ so widely, it is not wonderful that practical farmers should review the statements of both parties with distrust. Let us see what explanation can be given, why writers on agriculture should differ so greatly on this subject. When it was found that humus was formed by the decay of woody fibre, that it was soluble in alkalies, and that all fertile soil contained vegetable humus, Physiologists concluded that the plant received all its carbon to form its woody fibre from this humus in the soil, dissolved by the alkalies and alkaline earths, and supplied to the plant in a state of solution by the sap; and when such a theory received the sanction of so eminent a chemist as Berzelius, it was very generally adopted by European writers. Liebig saw the fallacy of this theory, and bringing heavy guns to bear upon this man of straw, he found no trouble in demolishing it speedily. But when in the moment of victory, firing a salute over his prostrate foe, he exclaims, "It becomes evident from most conclusive proofs that *Humus* in the form in which it exists in the soil, does not yield the smallest nourishment to plants," "it becomes evident" that the distinguished artillerist is prostrated by the recoil of his own gun! It is another illustration of the pendulum swing seen in human opinions; carried beyond the truth in one direction, it swings equally beyond the truth in the other. The pendulum was pulled far to one side of the truth when vegetable Physiologists taught that humus was the sole source of the woody fibre of plants, and the pendulum in its recoil swept equally beyond the truth when Liebig says, "it does not yield the smallest nourishment to plants."

I am also aware that there is great diversity in the opinions of practical farmers in regard to the utility of muck. If we will look closely at this subject, we will see that there is a number of very different substances all passing by the common name muck. One farmer uses one kind and is pleased with its effect; another uses another kind and can see no influence good or bad, while a third employs still another variety and finds his crops injured by it. The first says muck is always good; the second says it has no effect; the third says it is injurious. It is the old story of the chameleon's color, "they were all right and all wrong." These farmers are experimenting with three different substances, yet all called muck, and we need not therefore be surprised at the diversity of their opinions.

Before describing these different varieties let me say a few words in regard to the mode of its formation. Muck is formed wherever woody fibre decays with partial access of air, or where wholly or partially submerged in water. In all shallow or stagnant waters, therefore muck is yearly forming. All our small lakes are in this way slowly but surely filling up with muck. The vegetable matter growing in these waters or floating on their surface, decay and sink to the bottom forming a layer of muck. Where the water is not too deep, the sun's rays penetrating this layer of muck produce still further decomposition, generating marsh gas or light carburetted hydrogen, which being entangled in the particles of muck, increases its levity till large patches of it float to the surface. Aquatic grasses and weeds grow on this floating surface and soon the pond becomes coated over with a tough coating of sods which sometimes entirely obscures the water beneath. The Central Railroad track was laid across such a concealed lake near Niles, but the coating gave way one night precipitating the railroad embankment into a lake 70 feet deep.

If you will examine our small shallow lakes you will find this process in all its various stages. In water 4 to 12 feet deep you will find a light curdy gray mass which will become in process of time muck. Along the edges in water from 2 to 6 feet deep you will often find acres of floating grass and aquatic plants growing in this curdy muck kept afloat entirely by the grasses held by its fibres and particles. Thrust a pole into it and a large quantity of light carburetted hydrogen or marsh gas will escape, and the scum of vegetable growth will slowly sink to the bottom. This is best seen in the hot summer months; similar phenomena are seen at the mouths of rivers in warm climates where large quantities of vegetable matter are deposited. Thus at the mouth of the Mississippi River sometimes small islands rise to the surface, impeding navigation. They are merely hollow hemispheres of vegetable matter and mud. They are sometimes disposed of by firing a cannon ball into them, which gives vent to a large quantity of gas and the island disappears.

Along the border of these small lakes, the muck will be found in a more concentrated form, and this concentration will gradually extend towards the centre till a swamp replaces the lake. Thus our swamps are defunct lakes, and our lakes are incipient swamps. Nature seems to be saying to these beautiful little sheets of water, in language more forcible than elegant "dry up."

Let us examine a little more minutely the anatomy of a muck bed. When formed in very shallow water, you will find on the surface of the bed, especially if freely acted upon by air and frost, a layer of a deep brown color of soft powdery matter, easily crumbling between the fingers, not sour to taste or smell, and not adhering strongly to the fingers whether wet or dry. I shall employ popular rather than scientific terms and this variety I will call *powdery muck*.

Beneath this, powdery muck is a layer of dark tenacious matter of an unctuous feel, and cutting like old cheese; it adheres very tenaciously to the fingers when wet, and forms a hard coaly mass when dry. Here is a specimen from the same muck bed, one wet and the other dry. This kind of muck I call *cheesy muck*.

Below this last variety is another kind, still less acted upon by the air. When dry it forms a light brown spongy mass readily parting in horizontal layers, and showing very distinctly the remains of the mosses, ferns and aquatic plants from the partial decay of which it is formed. When dry it burns readily, giving off a good deal of heat, and leaving about 4 per cent of ash. Here is a specimen from the bottom of our muck bed. This specimen is taken from a quantity thrown up nearly 16 months ago, and notwithstanding its long exposure to air and frost, it shows but little tendency to decay. This variety I call *peaty muck*.

These three varieties are generally found in the order I have given, but occasional exceptions are found. When deposited from deep water, a layer of light-colored muck mingled with shells and organic remains will be found beneath the peaty layer. The reason for this inverted order I have already indicated.

Of these various kinds of muck, there is only one adapted for immediate use in farming, and that is the powdery muck. This will vary in its good quality according to the circumstances of its formation. As a general rule the darker its color, and the less its cohesiveness the better will be its quality.

Its beneficial influence upon soils will rise from its physical as well as from its chemical action. Among its physical properties it enumerates, first, its mechanical effect on cohesiveness of soils; second, its relations to moisture; third, its relations to heat.

Let us consider these properties in detail. Many soils abound in clay—have a stiff tenacious constitution, are not easily penetrated by either air or earth, require considerable force to break them, and are termed by farmers *heavy*. Pure clay stands at the head of this class, requiring the largest outlay of force to break it when dry, and adhering to the plow or the hoe with the greatest force when wet. By dried experiment it is found that the tenacity of muck is only  $\frac{1}{4}$  of that of clay. By adding muck to a stiff clay, therefore you greatly ameliorate this condition of the soil, at the same time permitting the ready escape of superabundant moisture, and admitting air freely into the soil on account of the very porous texture of muck. Many of you have doubtless noticed the converse of this. When you first cultivated your strong clay grounds where the mould or muck was already abundant in your soil, you found them open and easy to cultivate. But after you had cultivated the ground for a few years and the mould had become somewhat exhausted, you found your soil becoming more heavy year by year. Now the mould of your original soil is nothing but *powdery muck*. If you would restore the original physical condition of your soil, you have the means at your command in your muck list.

2nd. Different soils have the property of absorbing moisture from the atmosphere in different degrees. Sir Humphray Davy, was disposed to regard any soil exhibiting this property in a high degree, as giving proof of its good quality. Direct experiment shows that muck possesses this property beyond any other constituent of soil, possessing five times the absorptive power of common arable soil. Muck also surpasses all elements of soil in retaining moisture within its pores. In all the properties by which soils resist excessive drought, *powdery muck* stands at the head of the list, and garden earth, which contains a large amount of vegetable mould stands next. In a climate so liable to severe and protracted drought, as ours, this property is very valuable.

3d. When soils are exposed to the direct rays of the sun they become unequally heated, and this difference is often quite remarkable. Thus I found dry muck last August had a temperature of  $112^{\circ}$ ; dry sand  $104^{\circ}$ ; damp muck in a cornfield  $107^{\circ}$ ; black mould  $104^{\circ}$ ; brown clay  $100^{\circ}$ ; and gray clay  $90^{\circ}$ . Thermometer in the shade being  $80^{\circ}$ . This difference in favor of muck is equivalent to giving us a southern climate for our dark-colored soils. So strong is this tendency of dark colored substances to become heated beyond the temperature of the surrounding air, that I found my Thermometer in the open air having a black case would exhibit, even when in the shade, from 3 to 4 degrees of heat during daylight, above that indicated by a Thermometer with a light-colored case. Yet when placed in water they indicated the same temperature.

Muck has not only the property of readily and largely absorbing heat, but it also is equally free to give it off. This is the weak point in this substance. Where soils are largely made up of muck, as e.g. where they contain more than 10 or 12 per cent., they radiate their heat so freely at night that in low places they will often reach the freezing point while other portions of the field escape. Such soils are termed *frosty*. This shows that muck should never exceed 10 per cent., where we raise crops liable to injury by frost.

I do not propose to go into a very extensive discussion of the chemical relations of muck, and will endeavor to leave out all merely technical matter. We find muck to be a varying mixture of several different acids, more or less saturated with alkaline basis. These organic acids tend to still further decomposition, forming carbonic acid and water, or where hydrogen is in excess to form ammonia in addition. Let me say

here that it is only when these organic acids are neutralized by uniting with some alkaline base, that they are fit to be applied to your fields. Acid or some muck is often an injury to the soil.

I need not discuss at any great length the effects produced by the slow decay of muck in the soil. The carbonic acid thereby produced is absorbed by the roots of the plant, and goes to form its woody fibre. But carbonic acid has another and more important use. There are certain minerals existing in the soil, indispensable to the growing plant, but which are entirely insoluble in water, but which are readily soluble in water charged with carbonic acid, of these I need mention only carbonate and phosphate of lime. The carbonic acid in the soil, therefore, not only tends to build up the plant by its own substance, but it becomes as it were the hand by which the growing plant is enabled to seize the carbonates and phosphates necessary for its growth and maturity.

This nascent carbonic acid is also the great instrument by which the hard and inert mineral masses in the soil, are decomposed and fitted for the use of growing plants.

Not to discuss this matter to a tedious length, let me say that when the "mineral theorists" admit as they do, that *powdery muck* is identical with the vegetable mould in fertile soils, they already admitted enough to convince any candid farmer that this substance is not the useless and inert substance it is represented to be, and that any soil not already well supplied with this substance, or whose mechanical condition may be ameliorated by it, will be benefitted by a judicious use of *powdery muck*.

Another property of muck I will mention, which is partly chemical and partly physical. I refer to its power of absorbing and retaining the many salts, animal excretions gases and especially ammonia. It is this property which makes muck so valuable as an absorbent in the compost heap. So strong is the tendency of muck to absorb ammonia, that for a long while it was supposed that two of its acids contained nitrogen, until it was found that the nitrogen was contained in the ammonia it had absorbed. Upon this tendency to absorb ammonia much of the value of muck in the compost pile depends. Animal manures are very liable to great loss from the dissipations of ammonia, sulphureted hydrogen, phosphuretted hydrogen, which are formed by the decomposition of the manure, and volatilizing them escape into the atmosphere and are lost unless some good absorbent is present to take up and retain these gases. Let any one stir up a pile of horse manure that has lain for a few days and he will receive in his nostrils pungent proof of this fact. Such an absorbent we find in muck. By judicious composting with muck, all these volatile products of decomposition may be preserved. Where equal qualities of manure and muck are used, a compost may be formed equal load for load to the best well-rotted manure. In this way the farmer may practically double his supply of manure, without diminishing its quality. To attain this desirable result, however he must compost his manure as fast as it accumulates, and preserve by muck or other good absorbents this liquid manure which so often runs to waste. The importance of preserving this substance becomes evident when we reflect that more than half of the phosphoric acid excreted from the system is carried off in the urine. Muck, well wet with this makes a manure equal to the best short manure.

By reason of the powerful absorbent properties of muck we are able to employ some substances in our compost heap which we could not otherwise employ. All putrid and decaying animal substances may thus be employed in the compost pile without endangering our health or offending our olfactory. Last September a horse exhibited his singular want of good sense by choking himself to death in my stable. To correct his bad habits and to improve his tastes we concluded to send him to college, and lest he might "be in bad odor" there, he was drawn to the muck bed and covered with a few inches of muck; although students, farm laborers were passing and repassing within three or four rods of the place at all times of day, no one was annoyed by any unpleasant odor, or would have supposed the horse was there except from seeing the mound covering him. The soft part were all separated

into a rich and valuable manure, and the neighborhood was saved the usual olfactory torture. Here is a specimen of the compound produced.

There is another substance which contains in the largest proportion the most valuable elements of vegetable growth, which is almost universally neglected at the west. I refer to *night soil*. In the old world it is very generally used. In Japan almost no other form of animal manure is employed. In Paris it is manufactured into poudrette, and the Lodi Manufacturing Company, near New York city, have a large manufactory where over 1,000,000 bushels of night soil gathered from the vaults in New York city, are made into poudrette annually. This Poudrette is nothing but night soil mixed with muck, dried and pulverized. In Paris copperas, gypsum and powdered charcoal are used as deodorizers, but the Lodi Company, uses nothing but muck. This substance is very extensively used at the east and with the very best results. I am aware that there are many persons at the west, who, although they might not object to the use Poudrette, would be deterred from using night soil from a dread of the disagreeable odors which they would encounter. A French Marquis, by a happy circumlocution, defined this substance as "a species of perfumery which politeness forbids us to name!" All very correct if "perfumery" were the thing sought but as a very different thing is the object of search. I trust that "ears polite" will not be offended if I not only name it, but discuss it to some extent.

That this substance must be very rich in all the elements of vegetable growth, all intelligent persons must admit. There can be but two reasons for refusing to use it in agriculture. First, squeamishness, but as this has no legitimate place in scientific farming we will leave it out of court! at once—or, second, a desire to avoid the disagreeable odors to be encountered in its use. But when properly mixed with muck these offensive odors are entirely removed. The students whose duty it was to shovel over the compost heap in our experiment last spring anticipated a very disagreeable job, and they were very agreeably disappointed to find their unpleasant anticipations all unrealized. They all assured me that it was no worse to handle than so much stable manure. Here is some of the compost, and you can see for yourselves how free it is from offensive odors.

There is one more fact in the chemical characteristics of muck to which I wish to call your attention. I have already alluded to the fact that whenever muck is burned that an ash is left, varying from 4 per cent. in peaty muck, to nearly 12 per cent. in the powdery variety. The chemical composition may vary in different swamps, and I can only speak for the kinds I have examined, but I here present you the results of an analysis of the ash obtained from burning some of the *powdery muck* in the bed on the Agricultural Farm. I present it to show you that muck is not always a mass of vegetable humus leached to the last degree of exhaustion, by the action of water, and abounding in no essential ingredient, except it be carbonic acid capable of aiding in plant growth."

I found 54.61 per cent. of the ash was soluble in dilute hydrochloric acid, leaving 43.39 per cent. of sand and insoluble residue. In the solution in hydrochloric acid, I found the following substances.

Lime	17.08
Oxide of Iron	24.00
Carbonic acid	5.00
Sulphuric	3.21
Potash	1.48
Magnesia	.96
Silicic acid	.96
Phosphoric acid	2.55
	54.61
Add sand, &c.	45.39
	100.00

When it is considered that all these substances enter largely into the composition of the ash of all grains, it becomes evident that any substance containing such quantities of them, cannot be without value in agriculture.

The ash of this muck differs from that of the European muck, in containing sensible quantity of phosphoric acid. This

probably arises from the large presence of decayed forest leaves in our muck, which are probably wanting in most varieties of muck in Europe.

#### Cheesy Muck.

The supply of *powdery muck* in any muck-bed is usually quite limited, being confined to that portion of the surface which has been fully acted on by air and frost. It becomes a matter of importance then to know how to change the thick layer of *cheesy muck* to this *powdery* condition. This change is readily and easily effected when the right course is pursued. This cheesy muck is exposed to the action of heat alone and its moisture thereby driven off, it is changed into a very hard black mass—the very opposite of the soft pulverulent mass desired. But if this cheesy muck while its moist and plastic state is jointly acted upon by air and frost, the conversion to this powdery state is rapidly effected. To show how readily and rapidly this change is effected, on the 8th of January, I took some cheesy muck from the identical spot where this pasty mass was obtained, sliced it up and exposed part of it to the action of air and frost in boxes in the open air, while another part I kept in the laboratory preserved from the action of frost but allowed to freely evaporate its moisture in the warm air. Look at the results. Here is the hard black substance, which you can scarcely break with your fingers, upon which the frost has not exerted its disintegrating influence. But here we have the substance which has had the full influence both of air and frost, and this you will observe is a soft *powdery* mass, instead of the stony feel of the other variety, it has almost the softness of velvet—all the pasty, clammy stickiness of the original cheesy mass is entirely gone and you have in fact *powdery muck*. You will bear in mind that all this remarkable transformation has been effected by these wonderful chemists *air* and *frost* in one month! This one experiment is worth more than a volume of *a priori* conclusions of what humus can or cannot do to aid vegetable growth.

To change *cheesy muck* to *powdery muck*, it is only necessary to expose it in the moist state to action of air and frost and their wonderful alchemy will speedily effect transmutations that one would think almost impossible. Throw up the muck in long piles like windrows in the fall, of such a size, as the frost can freely penetrate, and in the spring you will find a powdery mass fit for use. If you have failed to get your muck thrown up in the fall it may be done in the winter. Go to any good muck-bed in the winter, and you will find the frost has penetrated only six or seven inches, and beneath this coating all is soft and easily handled by the shovel. Break up with an old axe and crowbar this coating, throw it into the bottom of your windrow, and then shovel the pasty mass in the top of this to expose it still more freely to the action of frost, and you will find your work is not so formidable as it at first appears. After you once get an opening in the muck so that you can dig under the frozen covering and thus facilitate your liberating it with the crow-bar, you will find the hardest part of your work done. I speak from experience on this point, having constructed two windrows in this way this winter.

Where muck beds are too soft to support teams on their surface in summer, the muck might be drawn off in the winter, shoveling it on to sleds or stone boats, and conveying it at once to the place for the compost pile, or wherever wanted.

The changes effected by air and frost on *cheesy muck*, are not merely alterations of its physical structure, but there is a change in its chemical constitution. By exposure to air it absorbs the ammonia of the atmosphere, thereby neutralizing its acids. In this way it is doubly benefitted. No acid or sour muck is fit to be applied to the soil by this exposure. It not only loses its fine soil, but it becomes a trap to catch and hold the vagrant ammonia of the atmosphere.

If the *cheesy muck* is exposed in this moist and sticky state to the fine action of the air in warm weather, so that it is thoroughly dried without the action of frost, these changes will be almost entirely prevented. Here is a piece which was dug up last May and exposed on the surface of the bed to the action of the sun all summer.

You will remember that this *cheesy* mass goes by the name

muck, as well as the other variety. Suppose a farmer had heard that muck was good for his lands, and should draw in May a quantity of this *cheesy* stuff on his land; the summer sun would dry it down into a hard inert lumpy mass fit only to throw at the heads of pragmatical theorists, and such a farmer might conclude that muck was *not* good for any land, and he might be very firm in his opinion.

The physical and chemical changes effected by air and frost, I consider to be indispensable to secure the desirable action of muck.

But little need be said in regard to the *peaty* muck. The slowness with which decomposition takes place indicates that it would be of but little use applied to the soil. Where it can be easily obtained it would doubtless make a valuable mulching for fruit trees.

#### Experiments with Composted Muck, Plaster, &c.

A series of experiments on meadow land was determined upon by the Faculty of the Agricultural College last spring, but before they were entered upon, they were effectually stopped upon all grass lands fitted for experimenting, by their being sown with plaster. This application was made without the knowledge of the majority of the Faculty, and was in direct contravention of rules which had been adopted to regulate and control such matters.

We were left therefore to the alternative of either abandoning experiments on grassland altogether, or of trying such experiments on grounds very poorly fitted for experimenting.—Upon consultation it was determined to try a few experiments on such grass-land as we had left. Field A. was selected, a piece of strong clay—upland. It was in wheat the year before and very poorly seeded with red clover, timothy and the usual infusion of June grass. Considered as a piece of meadow it was a poor affair. The only point in its favor was that it was *an even poverty*. Two acres as nearly alike in position and in the state of the grass as could be found, were selected and carefully and accurately measured into parcels of  $\frac{1}{4}$  acre each, which were numbered 1, 2, 3 and 4.

May 2d to 8th, 20 loads of powdery muck were drawn on to No's. 1 and 2; from the muck bed near the barn, and spread over the surface. May 9th on the same day common salt at the rate of 2 bushels per acre was sown on No's 2 and 3. No. 4 was retained as a standard by which to measure what the soil would produce without any manure.

Wherever the piles of muck had been deposited and where a heavier dropping was left, the grass especially the clover exhibited a ranker growth.

The grass was cut July 2d and 3d and cured in small cocks. July 6th the hay was shaken out to dry in the morning, but a sudden dash of rain prevented its removal that day. July 7th hay was carefully dried and taken into the barn in good condition. The hay from each piece was carefully weighed on Fairbanks' scale.

No. 1 gave 1010 lbs. nett gain from muck 208 lbs.

No. 2 " 951 " muck and salt 177 lbs.

No. 3 " 940 " salt 188 lbs.

No. 4 " 802 "

Before giving the results of experiments in hard crops it will be proper to present a summary of the observations on the weather. I here present a table exhibiting the mean temperature for each month from April to October, the mean temperature for five years, the average maximum temperature, the average mean temperature, the amount of rain for each month, and the average for five years.

	Mean Temperature for 1863.	A. Mean Temperature for 1866.	Rain.	A. V. Rain for five years.
April	47°71	60°17	34-89	1.64
May	61°73	54°60	70°71	47-20
June	64°40	65°40	73°90	49-90
July	69°68	72°70	77°09	54-82
Aug.	66°98	67°70	77°23	56-64
Sept.	58°33	41°60	65°48	8.03
Average.	61°55	64°42	71°25	47-49
				2.66
				8.75

The average temperature was nearly  $3^{\circ}$  below the average of five years, while the monthly fall of rain was 1.06 inch below the average. The season was cold and dry, especially after the close of May. August was colder than July, and September less than 11 degrees warmer than April was more than  $3^{\circ}$  colder than May, and  $6\frac{1}{2}^{\circ}$  colder than June. The night of September 21st was colder than any night in April by  $3^{\circ}$  as shown by the self registering Thermometer. On an average the nights of September were less than  $10^{\circ}$  above freezing point!

There was frost in every month of the year. I will give you the date of the principal frosts, indicating the severity of the same by the number of degrees the Register Thermometer sunk below freezing point. July 15th  $1^{\circ}$ , August 29th  $6^{\circ}$ , August 20th  $2^{\circ}$ , Sept. 9th  $2^{\circ}$ , Sept. 18th  $7^{\circ}$ , Sept. 21st  $18^{\circ}$ , September 25th  $9^{\circ}$ .

Looking at such a record of the weather, the first question that would naturally arise would be, not whether the crops would be injured but whether any could be ripened at all.

Look at the indications given by the rain-gauge. During the entire season of growth of the hard crops, the average monthly fall of rain was only 2.66 inches, while the average for five years was 3.72, showing a monthly deficiency of 1.06 inches.—From the 3d of April to the 1st February we have had only 29.54 inches on a monthly average of 2.64 inches, while in Boston Mass., there fell 12.25 inches in one week, or within  $\frac{1}{4}$  inches as much water in one week, as in 10 months in Lansing. During our cold season, viz: from August 25th to October 1st there fell only 92 inches, or less than an inch in 86 days.

As pure dry air presents almost no obstruction to the passage of heat, and it is only by the moisture in the atmosphere that the radiant heat of the earth is retained, we might expect that during such a dry period the range of the Thermometer would be very great. September 16th the Thermometer stood  $88^{\circ}$  in the shade at 2 P. M., and September 21st in the night it was at  $19^{\circ}$ , or a range of  $64^{\circ}$  in five days! The night of September 21st was  $2^{\circ}$  colder than any night in April! This abstract will give a farmer a vivid idea of "the pursuit of" crops "under difficulties."

The experiments in hard crops were performed by the members of the Junior Class, under my directions and superintendence. The following written directions were furnished the class as to the method of conducting these experiments.—"Keep a Journal in which enter

1st. Time of planting, weather present and preceding, state of dryness or moisture of the soil, the meteoric range and average temperature.

2d. Kind of seed employed, how prepared for the ground, whether cut or whole, wet or dry.

3d. Manner of planting, deep or shallow, in hills or drills or with or without manures—if with a manure, state the kind, manner of preparing, amount and how applied, if so how much and how applied.

4th. State when crop came up, and appearance of same thrifty or otherwise, color of leaf, &c.

5th. State time and manner of hoeing, how cultivated, appearance of crop at first hoeing—ditto of 2d.

6th. Give general statement of season, whether wet or dry, hot or cold.

7th. State results at time of harvesting, the time of ripening, appearance of stalks and vines, give exact yield in pounds as compared with the number of hills.

8th. State whether manures have had any marked influence on crop, if so to what extent. Make an estimate whether the expense of preparing and applying such manures, will result in a profit to the farmer.

9th. State any additional matters of interest which may occur in connection with the experiment.

At the close of the experiment each student made a report giving the results of the experiment, and I combined all their reports into one general report which I made to the Faculty, to be recorded in our "Journal of Experiments."

I will copy one of these reports entire, to give you a correct idea of the manner they conducted and reported matters.

**Experiments with Corn.**

**Journal of Experiments.** These crops were planted May 26th on gravelly loam. Weather mild and cloudy; had a shower the night of 25th of  $\frac{1}{4}$  inch, which was preceded by several days of dry weather. Soil moist and in good condition.

Corn, dent variety and sprouted  $\frac{1}{2}$  inch by soaking in water. Planted in hills  $\frac{8}{3}$  feet apart each way, 4-kernels in each hill and covered 1 inch deep. Row No. 5 had been manured with  $\frac{1}{2}$  shovel-full of compost in each hill, composed of muck 3 parts and night soil 1 part, and thoroughly mixed with the soil at time of planting.

Came up May 29th looking pale, probably caused by cold weather succeeding the planting. Hoed June 17th; was about 8 inches high, of a dark green color and thrifty. Previous to hoing was cultivated twice in a row each way.

July 9th cultivated twice in a row one way; was hoed by cutting up weeds and stirring the ground thoroughly around the plants, stood about  $8\frac{1}{2}$  feet high.

The heavy frost of the morning of August 30th injured leaves considerably; corn partially glazed. Another hard frost September 18th and 21st entirely killed the plants, on account of stalks being ruined, corn was allowed to stand on the hill.—Husked October 22d yielded  $108\frac{1}{2}$  lbs. of ears of corn, of good quality, worth 85 cents per bushel, \$1.26. Cost of cultivating after ground was fitted for planting 28 cents. Profit \$1.03.

Row No. 9 planted at same time and in same soil as No. 5, and with same seed, having no manure except 1 tablespoon full of plaster in hill; covered  $\frac{1}{2}$  inch deep, was unable to distinguish difference of Nos. 5 and 9 in time of coming up; looked pale.

At first hoing June 17th was 6 inches high, 2 inches lower than No. 5; color good. Hoed 2d time July 9th, was  $2\frac{1}{2}$  feet high, one foot lower than No. 5, color good, effected by frosts same as No. 5, stood on hill till October 22d when it was husked, yielding 78 pounds corn in the ear, of poor quality.—Value at 75 cents per bushel, 84 cents. Cost of cultivating after ground was prepared 28 cents. Balance 61 cents.

This is sufficient to show the character of the reports made by the class. I will now give a general report of all the experiments tried in hoed crops.

The compost used was made of three parts *powdery* muck and one part night soil thoroughly mixed together; after lying one week it was thoroughly shoveled over, and again at the close of another week, it lay in the compost pile only three weeks before it was used.

The soil selected for the experiment was a gravelly loam, it was planted with potatoes the year before, without any manure. The soil was analysed by the class, and was found to be well supplied with oxide of iron, lime, sulphuric acid, phosphoric acid, magnesia, potash, &c.

It was plowed about May 20th five inches deep, harrowed and marked off in rows three and a half feet apart each way. It received no manure except the substances hereafter specified, applied in the hill or as top dressing.

The seed corn used was a yellow dent, soaked three days in simple water, throwing out sprouts half inch long, four kernels were planted in each hill, covered from three-fourths to one inch deep. The rows were numbered and each member of the class had certain rows assigned to him and he had care of the row from the time he planted it till he harvested it, and made his report. The following table gives the number of row, name of experimenter, kind of applications used, whether as manure in hill or top dressing.

No.	Experimenter.	Application.	Hills.	Corn lbs.	Quality.	Per bu.	Gain per acre.
1-2	Compost.		58	114 $\frac{1}{2}$	Good,	101 bu.	37.75
3	"	top dr'd salt	39	75	"	98.74	34.75
4	"	"	55	107	"	98.74	"
5	"	plaster	59	101	"	89.49	26.24
6	"	"	68	108	"	77.65	14.40
7	"	plaster in hill	64	99	Poor	80.25	17.00
8	"	salt	23	26	not stated		
9	Plastered in hill		66	78	Poor	71.59	8.24
10	Salt		55	59	very poor	51.94	11.21 loss
11	Nothing		73	93 $\frac{1}{2}$	Poor	63.25	loss
12	"		70	84	"		
13	Top dr'd plaster		78	92 $\frac{1}{2}$	very poor	60.60	2.56 loss
14	"	salt and plas.	82	114	not stated	71.49	8.24

12. Wellings, 114 $\frac{1}{2}$  of all the crop was owing to Top dressed Plaster.

14. Hardy, 55 of all the crop was owing to Top dressed salt and plaster.

The quantity of compost used was half a bushel in each hill in the rows 1 to 8.

The corn was planted May 26th and came up from May 25th to June 1st. But little difference could be observed at the time the corn came up.

At the first hoeing June 17th the corn in rows 1 to 8 was 2 to 4 inches higher than that in rows 9 to 14. At the second hoeing July 9th the same rows 1 to 8 were from 12 to 20 inches higher than rows 9 to 14.

They exhibited all summer a very much more luxuriant growth, and it was very easy to distinguish those rows at a considerable distance from those not treated with compost. August 1st these rows were in full silk and blossom. August 10th the other rows were in full silk and blossom, showing a gain of ten days growth in favor of compost.

This unequal race was continued till August 29th, when Jack Frost tripped up the heels of both the racers, allowing neither one the crown of victory. This John Bull specimen of *nonintervention* is as unsatisfactory in agriculture as it is unwelcome in politics. Still something might be learned from the relative condition of the several rows to form some estimate, what the result would have been if the frost had not cut short the experiment.

The stalks were left standing till October 22d, when the rows were all husked, the number of hills in each row carefully mounted, and the corn grown on each row carefully weighed on Fairbank's Platform Scale. The same course was also pursued in estimating the potatoes. The propriety of this care is shown in the fact that a basket of corn or potatoes although filled as near alike each time as could be estimated by the eye, almost never weighed twice alike; the variation being from

The following table shows the results in corn:

No.	Application.	Hills.	Corn lbs.	Quality.	Per bu.	Gain per acre.
1-2	Compost.	58	114 $\frac{1}{2}$	Good,	101 bu.	37.75
3	" top dr'd salt	39	75	"	98.74	34.75
4	" "	55	107	"	98.74	"
5	" plaster	59	101	"	89.49	26.24
6	" "	68	108	"	77.65	14.40
7	" plaster in hill	64	99	Poor	80.25	17.00
8	" salt	23	26	not stated		
9	Plastered in hill	66	78	Poor	71.59	8.24
10	Salt	55	59	very poor	51.94	11.21 loss
11	Nothing	73	93 $\frac{1}{2}$	Poor	63.25	loss
12	"	70	84	"		
13	Top dr'd plaster	78	92 $\frac{1}{2}$	very poor	60.60	2.56 loss
14	"	82	114	not stated	71.49	8.24

Some of these results surprised me. I confidently expected a better return for the saline applications. The ruinous effect of salt in hill was expected, but the trifling effect from use of Plaster was unexpected. It is possible that the large quantity of sulphate of lime already in the soil, may render the further application of this salt useless. Another conclusion is more probable still, viz: that these experiments are indeterminate and need repeating to be at all decisive.

Throwing out of the calculation No. 8, and comparing the rows treated with compost, with those treated without it, we find a gain of over 44 per cent from use of compost.

**Experiments in Potatoes.**

Ten rows of potatoes were planted beside the corn, and on ground of the same quality and prepared in the same way.—They were planted the same day. The seed used was a large red potato called popularly "Western Red." They were cut in large pieces, and planted in flat hills, covered two and a half inches deep. The following table will show the name of experimenter, the manures employed, &c.

No.	Experimenter.	Manures.	Salines in hill.	Top dressings.
1.	Gibson,	Nothing	None	None
2.	Wellings,	"	1 Plaster	"
3.	Hardy,	Compost	"	"
4.	Gibson,	"	"	"
5.	Vanderbilt,	"	"	"
6.	Wellings,	"	Salt	"
7.	Hardy,	"	Plaster	"
8.	Daniels,	"	"	"
9.	Millard,	"	"	"
10.	Gibson,	Table spnfull plaster in hill.	one bowl	"
11.	Hardy,	Table spnfull salt in hill.	"	"
12.	Daniels,	Table spnfull plaster in hill.	"	"
13.	Millard,	Table spnfull salt in hill.	"	"
14.	Daniels,	Table spnfull salt in hill.	"	"

The potatoes came up June 8th to 10th. They were cultivated in the same manner as the corn, and hoed immediately after the corn. At the second hoeing they were made into large flat hills. The same superior luxuriance of growth from use of compost was to be observed in the potatoes as in the corn. It was not difficult to designate the four rows to which the compost had been applied. I should have stated that a shovel full of compost was placed in each hill of four rows 3d to 6th.

The frost of August were not as destructive to the potatoes as the corn. The vines maintained a moderate degree of vigor till the frosts of September 31st. The potatoes were dug October 21st and 22d, and gave a very fair yield, both in quality and quantity. Results.

No.	Hills.	Pounds.	Bush. per acre.	Gain per acre.
1.	86	383 1/2	258	00
2.	87	358	274	16
3.	88	472 1/4	358	100
4.	86	476	675	117
5.	88	476 1/4	385	127
6.	78	827 1/2	279	21
7.	81	332	273	15
8.	87	343	263	5
9.	88	318	287	21 (Less)
10.	88	341 1/2	274	17

Throwing out No. 6, ruined by salt in hill, and we found the compost giving a gain over what the soil alone would produce as shown in No. 1, of over 44 per cent.

These experiments are interesting and suggestive, but they are too limited to justify any one in drawing any very sweeping inferences. They need to be repeated and varied so as to detect and eliminate any errors, and to confirm and establish what truths they contain.

As the question of profit or loss is an interesting one to every farmer. I here present an estimate of cost and profit.

Rent of ground fitted for crop,	\$6.00
Preparation and application of compost,	1.83
Seed Corn,	.22
Seed Potatoes,	1.25
Salt and Plaster,	.25
Cultivating twice,	.60
Bowing twice,	2.70
Digging and husking,	1.95
Cost,	\$14.50
Cr.	
By 16 Bushels Corn, 50c.	\$8.00
" 68 " Potatoes, 50c.	31.50
Value of Crop,	\$39.50
Deduct cost,	18.50
Profit.	\$20.00

### HINTS ON RAISING INDIAN CORN.

In the cultivation of corn there is no stereotyped method, absolutely better than others, for every time and place. What may be best in the garden, may not be required in the field. What answers well in the small fields of New England, may not be needful in the thousand-acre lots of the West. Northern modes may not be exactly suited to the South. One can not and need not manure as highly at the West as at the East. Owing to the high price of labor at the West, one must use more horse power and less hand labor than at the East. Yet some things are the same everywhere. Everywhere, corn is a rank feeder, and wants an abundance of food. Where the land is in a state to admit of it, the roots will run from three to five feet in quest of nourishment. Hence the need of good land and good tillage. This tillage should mostly precede the planting of the ground after the roots have got established in it, breaks the surface roots, and seriously injures the plants.

As to the best manures for corn, that from the barn yard stands first. By this me mean not only the simple excrements of all kinds of stock, for these alone are not enough. The quantity may be doubled, and the quality hardly diminished, by using absorbents to soak up and save the liquid parts and the gases of the pure dung. What these absorbents are, we have often mentioned, as muck, peat, sods, straw, tan-bark, leaves, saw-dust, etc. Yet sometimes, the dung

heap and compost must give out before the crops are all fed. In such cases, the farmer must use with discretion such fertilizers as gypsum, ashes, poudrette, guano, bone-dust, dissolved bones, etc. Let him be specially careful in the use of guano, hen-dung and night soil, and other concentrated manure, or he will spoil his whole crop. They need to be mixed with several times their own bulk of soil before applying them near the seeds or roots of plants.

In preparing the ground, much pains should be taken to plow well, and to mix the manure thoroughly by careful harrowing. It is surprising what a difference this makes in the rapid and healthy growth of stalks, their exemption from the effects of drouth, and the plumpness of the ears. It saves a great deal of after-tillage, and prevents much anxiety as to the success of the crop. If the land be subsoiled, more of the roots will strike downward, and fewer will be broken and injured by the cultivator and hoe.

Corn in drills three to four feet apart, and the stalks 8 to 12 inches apart in the row, will give the best yield to the acre; but where land is cheaper than labor, it is usually more profitable to plant in hills, to rows running both ways, so that the plow or cultivator passing in both directions will do most of the work of tillage. The hill system lets warmth in on all sides, which is advantageous, especially on cold, heavy soil, or in a cool season. Corn is a sun plant and prospers best under warmth. The drill system prevents the stalks from crowding and shading each other. If planted in hills, the seed should be dropped four to six inches apart, so that the stalks and leaves will not interfere. This distance apart of hills, or drills, and of the individual stalks, depends both upon the strength and richness of the soil, and the variety in size of the corn. A good soil will support a nearer growth without depriving the roots of adequate nourishment. For the smaller varieties of corn, those growing 4 1-2 to 6 1-2 feet high, three feet apart for rows or drills is enough. The taller, 10 feet high varieties, require 3 1-2 to 4 feet is preferable to 3 feet, for medium soils, and for good sized field varieties. Four stalks are as many as can grow in a hill. Three good stalks will yield more grain than five poor crowded ones.

The best varieties of corn for any locality are best learned from the general experience of a neighborhood, though it is well to try small plots of new kinds for experiment. Let it be remembered that corn is easily spoiled for seed by dampness or heating in the shock or crib. It is but little trouble to sprout a handful taken as a sample from the whole lot, by putting it in a damp soil in a warm place. No one can afford to lose the first planting, or to have lot of deficient hills, simply for want of a few quarts of good seed. Plant corn very shallow; one inch is abundantly deep. If covered deeper than this, some of the kernels will rot before vegetating, if it chance to be cold or wet weather. Half an inch is usually deep enough. A little good, well rotted manure, or ashes, in the hill near but not in contact with the seed, helps to give the plant a vigorous start, even where the whole ground is not manured. The latter part of May is early enough for planting at the north. Warm soil starts the plants at once into rapid and vigorous growth.

LECTURE

BY PROF

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## DOMESTIC ANIMALS.

## LECTURE ON STOCK AND STOCK BREEDING.

BY PROF. M. MILES, OF THE STATE AGRICULTURAL COLLEGE.

Thursday, Feb. 11th, 1864.

*Mr. President and Gentleman of the Michigan State Agricultural Society:*

In performing the duty assigned me this afternoon, it will not be expected that I shall occupy your time with a labored address, or a systematic essay on the subject of stock raising.

Conventions like the present have for their object the discussion of practical topics, by those who from observation and experience are supposed to have become acquainted with facts of general interest, so that by a comparison of views we may make some progress in the right direction, by adding to the common stock of knowledge, and thus aid in promoting the interests of agriculture and improving it as an art.

My aim will therefore be to present briefly some general views of our subject, and then refer it to the intelligent farmers and stock breeders here assembled, for the discussion of particulars.

The want of time will prevent an examination of a large portion of the extended range of topics embraced in the subject of stock raising, and many questions of practical import, will therefore be necessarily passed over without notice.

In the first place it will perhaps be well to consider for a few moments the importance of stock raising, both in regard to the amount of capital employed, the probable encouragement for its increase, and the position this department of husbandry should occupy in a system of farm management.

And here as a matter of fact man, I crave your indulgence for the introduction of a few statistics, which, although, in themselves dry and uninviting, are, nevertheless, from the light they shed on our progress more eloquent and satisfactory than the most labored display of rhetoric.

In the Census Report for 1860 we find the following statement of the neat stock of the United States.

	1850.	1860.
Milch Cows,	6,363,785	8,668,265
Working Oxen,	1,683,067	2,158,184
Other Cattle,	10,280,372	14,059,325
Total.	18,832,224	25,450,744
Estimated value	\$542,067,276	\$1,098,862,855

In our own State the statistics of cattle are as follows:

	1850.	1860.
Total number,	274,500	534,267
Estimated value	\$8,008,734	\$26,220,026

In 1850 the improved lands of Michigan are reported at 1,929,110 acres, and in 1860 at 3,419,861 acres.

These figures show that in 1850 we had one animal to every seven acres of improved land, and 1860 one animal to every 6½ acres of improved land.

The estimated values show that in the ten years from 1850 to 1860 we had made an improvement in quality of about 50 per cent, an encouraging fact that should prompt us to efforts for still greater improvement.

From the amount of capital invested in this interest, it seems desirable that the greatest care should be taken to make not only productive, but capable of returning the largest profits.

An increase in value of but 25 per cent which might be readily made in a short time by a judicious system of breeding, would add no less than \$6,895,000 to the wealth of the State.

The probable increased demand at the west for neat cattle of good quality, will undoubtedly warrant the investment of additional capital in this branch of husbandry, and the more extended introduction of the improved breeds to take the place of animals of an inferior character commonly known as natives. The rapid increase of population in the western States, the numerous cities springing up as if by magic along the lines of

our railroads, and navigable water, point to a greatly increased demand for animal products for home consumption.

Besides, a comparison with other countries and States will show that a large number of animals will still be required to profitably stock the area of the young and rapidly growing western States.

	No. of Cattle to square mile.	No. of Sheep to square mile.
Great Britain, (1860)	41.6	271.5 In England and Wales 825.1 sheep to sq. mile.
Ohio, (1860)	41.5	76.5
New York,	40.	56.9
Massachusetts,	35.	15.0
Indiana,	34.7	63.8
Illinois,	27.4	13.9
Wisconsin,	9.9	6.2
Iowa,	9.7	4.7
Michigan,	9.5	26.0

No one will doubt that Michigan is capable of sustaining profitably as many cattle to each square mile of area as New York, yet about 1,115,411 animals will be required to supply the deficiency now existing.

Another encouraging indication, favorable to the increase of stock raising, is to be found in the Eastern markets.

The eastern States are beginning to look to the west for their supply of meat as well as of grain, and this demand is constantly increasing.

The number of beef cattle received at Chicago in

	Retained for Home consumption.
1859	111,694 23,504
1860	177,101 42,074
1861	218,142 26,679
1862	291,477 37,223

A small proportion it will be seen was reserved for home consumption and the rest found a market at the east.

In the Cattle Report of the "American Agriculturist" for the year 1863 we find the number of beef cattle, slaughtered in the city of New York, put down at 268,229; of this number the reporter had ascertained the origin of 209,941 of which 5-6 were from the western States, Illinois alone furnishing more than half the entire amount.

Any increase, in the demand for beef cattle at the east, will make the proportion drawn from the west much greater than it is at present, as it will not, as a general rule, pay to fatten cattle at the east, except for the purpose of manufacturing manure.

The production of butter and cheese must necessarily engage the attention of stock farmers there, and the west must be allowed to furnish, without successful competition, the principal supplies of meat and grain.

The census reports plainly show this tendency as may be seen from the following table giving the ratio of milch cows to other cattle in several of the States:

	Milch Cows.	Other Cattle.
New York,	100	to 76
Massachusetts,	100	to 93
Ohio,	100	to 138
Wisconsin,	100	to 164
Michigan,	100	to 166
Illinois,	100	to 174
Iowa,	100	to 184

The western States are then emphatically the stock raising States and the present tendency seems to be towards the production of beef cattle rather than butter and cheese.

So far as the greatest profit is concerned a blending of their interests, at the west, to a certain extent is perhaps desirable, as in many localities the manufacture of butter and cheese, would be more profitable than the exclusive production of beef.

The direction in which our efforts may be successfully put forth for increasing the profits on animal products, depends on such a variety of circumstances and conditions, that a careful examination of the functions or use of cattle in a system of husbandry, will be necessary, before a satisfactory conclusion can be reached as to the general principles which should guide our practice; and then the wants of particular localities, or the peculiarities of the farm itself, should be taken into account, in determining the special system to be adopted in individual cases.

As there are many distinct interests involved in the mixed

system of agriculture generally pursued at the west, it seems desirable that definite notions should be formed of the advantages to be derived from the introduction of stock husbandry as part of the system of farm management, and the relation which it bears to the other interests of the farm.

The distance, our farm products have to be transported, to find a market in the eastern States, exerts an important influence on the prices that might otherwise be realized. The cost of transportation is in fact added to the cost of production and the profits are of course diminished accordingly. Those articles then, that can be transported with the least expense on equal values, other things being equal, should afford the greatest profit to the producer. Those familiar with the rates of freight on farm products are aware that animal products are charged less in proportion to their value than vegetable products.

Hon. I. B. Grinnell, of Iowa, states that the average cost of transportation for a distance of 200 miles west of Chicago to New York is

80 per cent of the value of Wheat.
80 " " " Pork.
20 " " " Beef.
and 4 " " " Wcol.

I regret that I am not able to present a statement of the average relative cost of farm products from Michigan to New York. The absolute cost would of course be much less, but the relative difference would undoubtedly be nearly the same as above stated.

This difference in the cost of transportation would then be a strong argument, to the farmer, in favor of converting the vegetable product of his farm into animal products before offering them in market. The relation of our domestic animals to the soil, and its fertility, is a subject of great interest claiming our careful attention.

The agricultural chemist informs us, that, as we remove from our fields the various crops grown, certain mineral substances derived from the soil, and entering into their composition, are carried away, subjecting the soil to a serious loss and diminishing its fertility unless measures are taken to replace them. This fact, of great importance to every one interested in the cultivation of the soil, naturally suggests the question as to the best method of preventing this waste or of returning to the soil the mineral substances thus removed from it.

When grass and grain, or other vegetable products, are fed to animals but a very small proportion of the mineral constituents are assimilated or made use of by the system, and consequently find nearly or quite all of them are ejected from the system, forming an important element of the manure.

In the well known experiments of Boussingault, it was ascertained that the food consumed by a horse in 24 hours, contained 1 lb. 9 oz. 12 dms. of mineral substances, while there appeared in the excrements during the same period no less than 1 lb. 10 oz. of mineral substances or about  $\frac{1}{2}$  of an oz. more than was contained in the food consumed.

The food consumed by a cow in 24 hours contained 2 lb. 4 oz. 11 dms. of mineral matters while the products voided by the cow in the same time contained 2 lb. 5 oz. 10 dms. of mineral matters, or nearly an oz. more than had been consumed in the food.

Horsfall, fed six cows for a period of over 27 weeks on a mixture of meadow hay, rape cake, malt combs, bran, beans, turnips, oat straw and bean straw.

The total quantity of feed consumed contained 428.5 lbs. of phosphoric acid.

Of this 45 lbs. appeared in the milk.  
and 373.0 " " " manure.

The quantity of milk given during the experiment was a daily average of 14 imperial quarts for each cow.

In young growing animals and milch cows a moderate amount of mineral matters is retained from the food by the system, but in animals that have attained their growth (with the exception of milch cows,) all the mineral substances of the food consumed are to be found in the manure. This is a fact of great significance to the stock grower which points to considerations of great practical value. We should then expect animal products to make a less drain, upon the mineral riches of the soil,

than do the vegetable products, and this we find from experiment to be the case.

For the purpose of illustrating this subject as fully as possible, in the shortest space, I have prepared a table showing the relative effects on the soil of the removal of equal values of some of the common farm products.

\$100 worth of	Quantity.	Price.	Amount of Water.	Amount of dry Substance.	Amount of Mineral Substance.	Amount of Phosphoric acid.	Amount of Potash.	Phosphate of Potash.	Relative amount of drain on the soil.	Min. Sub. on the soil.
Butter	800 lbs.	12 Kc pr. lb.	8	.792	0 8	.884			1	
Milk	200 "	60c "	8	.919	4 06					
Cheese	383.4 qts.	8c pr. qt.	6236.56	.919	35.06	7.96				
Bacon	125.0 lbs.	8c pr. lb.	750	.919	87.5	18.75				
Animals	50 lbs.	12c pr. lb.	422.8	.919	23.97	5.98	24.08	48.57	104.46	49.53
Onions	2500 lbs.	4c pr. lb.	1853.5	.919	80.65	19.65	43.25			
Wheat	2000 lbs.	10c pr. lb.	1615.52	.919	114.29	61.86	82.42	98.78	142.56	132.56
Potatoes	400 "	5c pr. lb.	503.5	.919	51.62	25.49	58.72	87.67	156.86	156.86
Carrots	500 "	20c pr. lb.	508.5	.919	231.6	19.94	100.00	119.94	259.57	259.57
Onions	800 "	12.5c pr. lb.	4249.9	.919	288.8	28.8	59.9	125.68	292.25	292.25
Timothy Hay	400 lbs.	20c pr. tn.	4224.8	.919	316.52	42.4	218.87	87.47	883.15	883.15
Clover Hay	20 lbs.	4000	35600	.919	1888.24	212.62	585.5	801.84	2934.4	2934.4
				.919	3164.4	129.42	810.29	939.71		

The last column of the table giving the comparative amount of loss arising from the removal of the crops mentioned, is particularly interesting as it shows the difference in the exhausting effect of crop, in the most striking manner.

The amount of mineral substances in \$100, in value of minerals is given in the table at 90 lbs. This of itself would give an erroneous impression in regard to the effect upon the soil of the removal of this amount of mineral matters from the farm, for we find that in the food consumed during the growth of the animals, mineral matters to the amount of over 900 lbs. have been furnished the system but 90 lbs. of which has been retained, while over 800 lbs. has been voided in the manure to be returned to the soil.

Instead of being charged simply with the 90 lbs. of minerals carried off, a credit of least 800 lbs. of minerals should therefore be given to show the true result of the transactions.

A similar credit should be given the butter, cheese and wool for the amount of mineral matters returned to the farm in the manure of the animals that produced them.

In producing animal products, then we actually add to the mineral wealth of the soil instead of diminishing it.

The advantages of selling animal products from the farm instead of grain and hay, so far as the effect on the soil is concerned, has I trust been satisfactorily shown and the practical lesson to be drawn from the facts stated, is sufficiently obvious without comment.

It has been said by an eminent breeder that animals are to be considered as machines for converting the products into greater money value; but do we not find in addition that these machines perform another function equally as important, that of separating from the food and returning to the farm, in the refuse of materials worked up, those substances that cannot be spared from the soil without permanent loss?

Closely connected with this subject is that of the proper system to be pursued in feeding stock, both with reference to the adaptation of food to the kind of animal product to be produced, and the greatest profit that can be gained in the manure, but one time will not admit of an extended discussion of either of these topics.

If animals are to be considered as machines for converting the various field crops into other articles of greater money value, is it not for the interest of farmers to furnish these machines with all the work they can well perform, should they not be required to convert the largest possible amount of raw materials into animal products; in other words is it not most profitable to feed liberally, to furnish animals all the food that can be profitably consumed, instead of trying to limit them to the smallest possible amount of food required to keep the machinery from going to pieces?

This would be the argument with any other kind of machinery, and why should it not apply with equal force to the subject under discussion.

The question then would be, not as to the largest number of animals that can be kept on a given amount of feed, but as to the smallest number required to profitably work up the vegetation grown on the farm.

In estimating the profits of stock husbandry, the value of the manure produced should always be taken into the account and this item would of course vary in different localities.

In many places cattle and sheep are purchased and fattened, solely with reference to the value of the manure.

If the animals are sold for enough to pay the cost of the feed they have consumed, the result is considered satisfactory, the value of the manure being thought sufficient to pay for the trouble of feeding, and a reasonable interest on the capital employed.

Many successful farmers are in the habit of buying largely both of hay and grain to feed on their farms, in addition to their own productions, for the purpose of increasing their stock of fertilizers, and they find the greatest profit, as a general rule, in feeding liberally of those substances that make the most valuable manure.

In England the feeding of stock has been reduced to a system, by many of the most intelligent farmers, and careful experiments have instituted for the purpose of ascertaining the value of the manure made from different articles of food, as well as the adaptation of the food to the various purposes for which it is used.

The following table by J. B. Lawes, Esq., is considered the most reliable so far as the value of manure in England is concerned:

Kind of food.	Value of manure from one ton of each kind of feed.
Linen cake.....	\$19 72
Beans.....	15 75
Peas.....	18 38
Oats.....	7 50
Wheat.....	7 68
Indian Corn.....	6 65
Barley.....	6 32
Clover Hay.....	9 64
Meadow Hay.....	6 43
Oat Straw.....	2 90
Wheat Straw.....	2 68
Potatoes.....	1 50
Mangolds.....	1 07
Swedish Turnips.....	91
Carrots.....	66

The actual value of the manure in this country would of course be very different from what it is estimated in the table, but the relative values would undoubtedly be the same here as in England.

The true function of live stock in a system of husbandry would therefore seem to be, to change the vegetable products of the field into mineral products of greater value, and at the same time save from loss those mineral substances that are absolutely essential to the fertility of the soil.

If the facts, already presented are kept in view, we can certainly be better able to decide upon the precise system of husbandry to be adopted in any particular case, and the relative prominence to be given to stock raising or the dairy.

It would be exceedingly difficult to lay down any general rule on this subject that would be applicable to even a majority of farms.

Each farm has peculiarities arising from location and differences of soil that must influence to a greater or less extent, the system of cultivation that can be profitably pursued.

Each for himself must consider, the peculiarities of his farm, and its adaptation to the growth of particular crops, and then decide upon the system of cultivation to be pursued, and the character and kind of stock to be kept with the greatest profits.

Success will then depend very much upon the judgment and skill applied to the task of settling upon a plan, and their energy and perseverance with which it is carried into execution.

The question proposed in regard to the relative value of the improved breeds of cattle is one of great importance but an exceedingly delicate one to meddle with.

Before answering this question, and deciding positively between the numerous competitors for public favor, it would be well to look squarely in the face the many difficulties that might arise, the danger of being pushed on the one side by the short-horns, or of being gored on the other by the Herefords or Devons, of being confronted on the one hand by the Galloways or Ayrshires and retreat cut off, on the other hand by the diminutive Kerrys, or the aristocratic Alderneys.

To award either the palm of superiority would be rank injustice to the other, unless the decision was qualified by reference to the particular situation it was to occupy, and particular use to which it is assigned.

Can imagine situations in which the Kerry, the beginning of cattle-dom, would very much exceed in value the short-horn, and superiority would consist simply in its adaptation to surrounding circumstances.

Review the conditions of the situation, and my choice would fall on a breed of more majestic proportions.

Each breed has its merits and fortunate it is, that these merits are not of the same kind.

The improved breeds have originated in different localities, under surrounding circumstances quite dissimilar, and they have been bred with reference to their adaptation to their conditions.

Each, then, has peculiarities of its own that adapt it to the especial purpose for which it is intended, and each has its sphere of usefulness, where the others cannot be brought into successful competition.

It is perhaps impossible to produce a breed that will excel in all desirable points and qualities, and even if it would be accomplished in one locality it would be exceedingly difficult, if not impossible to retain their characters in other localities.

To attain the highest excellence in the development of certain qualities, we must rest satisfied with a moderate development of other qualities, or as the poet and philosopher Goethe has expressed it, "in order to spend on one side nature is forced to economise on the other side."

There is no difficulty in selecting a breed that will excel for a special purpose, but when we are selecting a breed for a variety of purpose, or as our horse breeders would say "for all work," we must be contented with a moderate degree of excellence in some qualities, and our choice would be guided by the qualities that we wish to make most prominent.

There is a certain plasticity in the constitution of animals, that enable them to accommodate themselves to a certain extent to the varying conditions in which they are placed.

To this property of the animal economy we are indebted, for the extent to which improvement has been effected in our domestic animals, by skillful breeders who have moulded and developed their characters in accordance with their own standard of excellence.

This plasticity of character, although essential to successful improvement, is nevertheless one that may lead to as rapid deterioration. We are constantly though perhaps unconsciously, varying the qualities of our domestic animals by our various modes of feeding, breeding and management, and unless these changes are controlled and turned in the right direction, we shall be making progress backwards. There are none of our improved breeds with characters sufficiently fixed to enable them to successfully withstand the effects of improper management. Carelessness, or want of skill, in the breeder will surely result in an undesirable change of characters.

Instead of asking "which is the best breed for a particular purpose, in a certain locality," it would perhaps be better to ask, "which is the breed that can be best moulded and adapted to the particular purpose required in that locality, for we should then recognize this flexibility of character and be on our guard to profit by the advantages to be derived from it, and avoid the dangers of deterioration which it affords."

Careful, persevering effort in accordance with a fixed plan, is required in the breeder if he would retain in their present perfection the good qualities already possessed by his stock, or make progress in the right direction by improving and impressing upon its characters of still greater value and excellence.

The President next introduced to the meeting Mr. SANFORD HOWARD, editor of the Boston *Cultivator*.

Mr. Howard said :

The point to be considered is how man can mould animals to his own wishes, whether the changes effected, or sought to be effected, are valuable or not. Selection is the principle on which we start. The animals which possess the properties which render them valuable for any specific purpose, are selected and held together. As a first result we do not find in their offspring an entire uniformity; some have less of the properties which constitute the special object of the breeder, than their progenitors, and some have more. The proper course is to select the best for breeding; to seize on those varieties which most favor the grand object, and to continue this course from generation to generation. If we consider the means employed by the most eminent breeders, it will be found that selection was the principle on which they practiced.

The improvement of natural breeds has been effected by the selection of breeding stock within a single variety. The formation of artificial breeds is due in the first instance to crossing, or the amalgamation of two or more breeds, but afterwards to the same principle of selection pursued in the improvement of natural breeds. Thus there are two courses of improvement, breeding from animals of the same blood, and from those varying in blood, but after a cross has been made, the ideal standard being established, selections will be made from the cross with reference to this standard, so that with the exception of the diverse origin of the parent stocks, the two systems of breeding are in principle the same, the object in both being the production of animals of particular properties, and the selections being wholly directed to those which possess them. Numerous examples he said might be cited of the improvement of animals by both these systems,

and we have the highest authority in support of each, according to the circumstances in which they are placed.

In the attainment of any specific object, the first question which presents itself to the mind of the breeder is—how can the end be best attained? He will take into view the characteristics of the existing breeds, and by studying their points and tendencies, make up his mind whether the properties at which he aims can be secured by selecting his breeding animals wholly from any one breed. If crossing is decided on, it will be practiced with selected specimens of such breeds as by their union will be most likely to give the form and properties sought after. In the cross-bred stock there will not be at first an entire uniformity of character, but this is no evidence that uniformity of character may not finally be obtained.

Very loose and ill-founded ideas seem to be entertained on the subject of purity of blood. The terms "pure bred," "thoroughbred," "grade," &c., are often used without well defined rules for their application. The English race horse, for instance, is known to have been derived from various intermixtures, and yet it is the only variety of the horse commonly recognized as "thoroughbred." Whenever a horse is spoken of as thoroughbred, it is always understood that the race horse alone is meant to be understood as blood without mixture. How or where could animals which originated in intermixture become pure bred, thoroughbred, or pure blood? Grade animals are those understood to be those who have more or less of the blood of some recognized breed, with more or less of some other blood. According to this, why are not all animals derived from an intermixture of blood grades? It is well known that some of the most noted flocks of merino sheep in this country originated from native ewes and Spanish rams, none but those being used for the flocks for several generations. If these are not grades, how long is it since they were? If agricultural societies are to prohibit what are called grade animals from competition for premiums, they should adopt some definite rules in the case.

The subject of in-and-in breeding is variously understood, and there is a want of definiteness in its application. Sir John Sebright considered it to signify breeding from animals of precisely the same blood. If this is admitted, it follows that the union of animals which differ at all in blood is not in-and-in. For instance, with father and daughter, or mother and son, the blood may not be precisely the same. The offspring of such a union would have three-fourths of the blood of one of the parents, but the other quarter might be quite different. On the other hand, in the union of brother and sister, the blood is precisely the same, and according to the rule of Sebright, this would be in-and-in breeding. The system of breeding from a parent to its offspring of course approximates to this. If, for instance, a male and female of different families be united, the offspring inherits half the blood of each. This offspring, bred to either of the parents, gives the next generation three-fourths of one of the first pair, and one fourth of the other. The third generation bred again to the same animal, would give

the next generation seven-eighths of one the parent, and one-eighth of the other. Sebright and Berry call this "breeding in." It is obvious, however, that whatever are the consequences of in-and-in breeding, those of breeding in, so called, must be similar in proportion to the extent to which the practice is carried, or in proportion as the blood of the animals bred from is the same.

The consequences of close breeding may be either good or bad. The result depends on the constitutional tendencies of the animals bred from. Domestic animals are subject to certain diseases or defects which are transmissible hereditarily. In the ordinary course of breeding he considered the danger of propagating defects much less with animals of remote offspring, than with those nearer akin. There are certain cases in which it may be necessary to breed from animals of near affinities. If, for instance, an extraordinary disposition to fatten is manifested in one animal, and is not to be found in others of the same breed, it becomes necessary to breed directly from this animal, if it is desired to obtain his property in the highest degree. One reason, probably, why animals in a natural state do not suffer from in-and-in breeding, is the perfection of their organization and general freedom from diseases. Sebright has well observed, "the circumstances in which wild animals are placed, produce all the advantages of the most skillful selection." Every trait in animals which is at variance with the normal type is more or less of a morbid character. Cases might be cited when an adherence to animals of the same family has been necessary to retain certain properties and establish a new variety in which these properties should be fixed, as in the short-horn bull "Hubback" pronounced by those who could appreciate his value to be a "most wonderful animal."

From the view of the subject thus presented, the conclusion may be deduced, that breeding from animals of near relationship may be properly practiced, so far as to fix and perpetuate some valuable property not belonging to the breed in general; but where no such superiority is exhibited, or when individuals composing a breed are nearly alike, there is no advantage in resorting to the system. Some persons, through fear of injurious consequences of consanguineous breeding would cross every species and breed capable of intermixture; others push into the opposite extreme and deny that any improvement has ever been effected by crossing; a good illustration of the maxim that "extremes are good for nothing."

THURSDAY afternoon, Feb. 11.

The afternoon meeting was opened in the hall, at half-past 2 o'clock P. M.

The President introduced Mr. STARKWEATHER, of Ypsilanti, who would deliver an address on the subject set apart for the afternoon's discussion, viz:

### SHEEP CULTURE AND THE PROFIT AND PROSPECTS OF WOOL-GROWING.

Mr. Starkweather said that in 1845 it was announced by the census that Michigan had exported 150,000 lbs. of wool that year. From the same source it was shown that in 1850 2,043,000

lbs. were exported, and in 1860, 4,062,858 lbs.; showing an increase of over 100 per cent. Michigan is now the fourth wool growing State in the Union, exceeded only by Ohio, New York, and Pennsylvania; the latter State beating us by only 600,000, with three fold the quantity of improved lands, and a population of 2,906,115, against 794,000. He considered that Michigan, with her present population and number of acres of improved lands, could double her crop without materially interfering with other branches of agriculture. From twenty years experience he was satisfied that sheep-breeding can be profitably conducted in Michigan. Allowing the land to cost \$40 per acre, and labor and wages at \$15 per month, provided we can realize ready sale for wool at home, at 35 cents per pound, and \$1.50 for the carcass, we have a handsome profit, and this is estimating at the lowest rate. Two hundred dollars profit on one hundred sheep, not taking into account the Spanish proverb that "the land whereon the foot of sheep treadeth turns to gold," which is literally true when applied to the preserving and perpetuating the fertility of soil, is an amount more easily obtained involving less care and perplexity than that of any other branch of industry to which the husbandman can turn his attention. In the chain of rotation of crops, sheep husbandry, with reference to wool, presents an important link, indeed there is no product of the agriculturist which gives greater pecuniary returns and is less exhausting to the soil. The entire crop in 1860 amounted to 62,017,153 pounds; resuming that five pounds is the quantity required for each individual of our population, there is still a deficiency of 65,199,457 pounds, which must be imported from abroad in the raw material, or manufactured and paid for in gold. Such a state of affairs with a people possessing the advantages of capital and skill, and embracing half the size of the wool-growing portion of the globe, is more than passing strange.

It is generally conceded that supply and demand at all times regulate the prices of articles of traffic, but in this case no general policy familiar to the public has yet been defined. This and the next month he thought would determine the question. He gave it as his opinion, that prices would slightly advance, owing to the upward tendency of gold.

In two hundred dollar's worth of wool only eight pounds of the mineral substance of the soil is exhausted, and this is more than returned to it. By this it would appear we can preserve and perpetuate the fertility of the soil to an indefinite degree. No system of rotation of crops can approach success by the cultivation of cereals alone. Wool-growing and stock-raising must form an essential item, and the more the latter consumes of the former on the premises on which they grow, the greater and more certain is our prosperity.

The natural and artificial advantages for wool-growing in Michigan are unsurpassed by any State in the same latitude east or west. Good pastureage in spring, summer and fall, with access to water and salt, constitute a bill of fare on which sheep thrive. Winter management requires more care and skill. They should be allowed what good hay they can eat, with the addition of half a bushel of corn per day to every hundred head, and access at all times to salt, ashes and sulphur,

equal parts in weight of the two former, and one pound of the latter to thirty pounds of the mixture, placed in a box where they can get at it.

The speaker gave a great deal of statistical information regarding wool crops in other States, which is not of local importance.

#### Profits of Stall-Feeding Cattle.

Last fall Mr. Stephen White, of this village, bought 12 head of two-year old Steers, and also bought, at the high prices then prevailing, the hay, corn and straw necessary to feed and make them comfortable. The steers were tied up and kept in the stalls until sold. The corn was ground, and the meal fed dry, sparingly at first, gradually increasing until all the animals would eat what was regularly fed them. A boy was hired to feed, water and curry the steers, clean and bed the stalls for these and other cattle. The twelve animals cost, in the Fall, \$159, and the whole cost of animals, feed and labor was \$280. On Friday last they were sold for \$40 per head—\$480—leaving a profit of \$200. It will be noticed that this is not the full profit a farmer would realize from the same transaction, but \$200 is the profit upon feeding, and is in addition to that upon raising the young stock and feed. Stall-fed beef will pay, every every Spring, and it should be in constant supply until the summer or early fall months.—*Charlotte Repub.*

#### Splendid Cattle.

MIDDLEVILLE, Feb. 15th, 1864.

To the farmers of Barry County; Does it pay to raise blooded cattle in Michigan? I think it does. I weighed four head of cattle for J. C. Bray, of Thornapple, that he sold to Mr. Miles for beef. They were exhibited at our County Fair last fall. One pair of steers two years old, past, coming three, weighed 3320 pounds, and brought \$182; one one year old, past, coming two, weighed 1140 pounds, price \$65; and one cow, weighed 1700 pounds, price \$93.

J. F. EMORY.

#### AUSTRALIAN COFFEE SEED.

We have often heard this seed spoken of, but never until lately had the opportunity of examining it. Mr. R. H. HOLMES, of Unadilla, Livingston county, in this State, has forwarded us fifty seeds of this comparatively little known and useful seed—in appearance they are much like a marrowfat pea, having, however, a slight upraised turned point on one side. They are said to make good coffee, and are cultivated like white beans—putting one seed in a hill two feet apart. This rare seed was sent from Australia to Mr. G. R. Huffman, of Effingham, Ill., by his son who is in that country. Mr. Holmes has raised them for two years and has found them a great success for farmers who wish to raise their own coffee, they seem well adapted to this soil and climate. Any one forwarding him \$1 by mail will have sent him its value in this new and useful seed, as he has more than is necessary for his own use, and is willing to give his brother farmers a chance to obtain so important a product as he thinks this is likely to prove itself.

## F L O R I C U L T U R E .

#### GREEN-HOUSE AND FLOWER GARDEN.

W. D. Brackenridge, florist, gives the following seasonable hints in the Maryland *Farmer and Mechanic*; they are applicable to this latitude during the latter part of March and first two weeks of April:

The sun now getting higher, and the days longer, exercises a powerful influence on plants under glass, particularly after the cold winter just past, during which an extraordinary amount of fire heat became necessary, in order to repel the severe frosts,—a favorable opportunity for admitting air seldom presenting itself. It will therefore be observed that under so long close confinement, soft wooded plants have become drawn up and weakly, particularly if they have been situated far from the glass; when such is the case, it is wise to pinch the tops off such sorts as will produce flowers on their lateral branches. This operation will retard the season of blooming, but in course of time bushier plants will be obtained. Under such circumstances we never hesitate at this season of the year to pinch black Salvias, Fuchsias, Pelargoniums, Verbenas, Lantanas, and such like soft wooded plants, that is, if they have not already shown their flower buds; but some species, if shortened back at this stage, may not produce flowers the same season.

During the present month, the Greenhouse or Conservatory should present a gay appearance with Chinese Primroses, Camellias, Azaleas, Hyacinths, Chorozemias, Acacias, Epacris, and other New Holland plants. Observe on all mild conditions of the weather, to admit air freely, and see that this is attended to in the early part of the day, or before the temperature gets too high from the effect of the sun's rays, and then mind to close up in the afternoon before the house gets cold; better to shut in a little of the sun's heat, than to raise the temperature by fire.

Cinerarias should be kept near the glass, giving them a liberal supply of water, and successive plants not showing their flower stems, should be shifted into pots in which they are to bloom, guarding against their great enemy—the green fly, by fumigating frequently with tobacco. If there are any choice varieties from which you wish to have seeds, set them by themselves while in bloom, where they will receive abundance of air, and be free from the influence of the pollen of the common sorts. In this way, with a little care, a great improvement may be effected on the existing varieties of this beautiful and easily cultivated plant. Herbaceous Calceolarias require pretty much the same treatment as the last, only

a little more care is necessary in bringing them forward, being more tender in their foliage, and more subject to the attacks of insects; they also require a little more, with a free circulation of air about them. Pelargoniums will now be opening their flowers. Keep tying them out to their stakes, as they grow, so that both the flowers and foliage may stand free of each other—give air freely in mild weather, but be careful and not over water at the roots. Give a partial shade to your Camellias when in bloom, and until they have finished making their growths, and during the same period they will require a more liberal supply of water, than at any other. Azaleas will flower well in the same house as the last, only they require less shade after they have done flowering, at which time, such as require it, may be shifted into larger pots. Young plants in small pots so soon as they begin to grow, should be moved into larger ones. Pot off cuttings put in last month of Heliotropes, Verbenas, Lantanas, Petunias, Pelargoniums, &c. Also prick out in shallow pans or boxes all seedlings of tender annuals so soon as they become large enough to handle, keeping them in a close warm atmosphere until such time as they have taken with the earth. Cut back your Acacias well, after they have done flowering, so that they may form nice bushy heads—and all seedlings of New Holland and Cape of Good Hope plants, should be potted in what is called thumb pots, before they become matted together in the seed pan. Pot a few more Achimenes roots, and shift into larger ones, those started last month—give them a warm position, where the atmosphere has a tendency to humidity. Chrysanthemums may be propagated this month, either by division of the roots, or from tips of the young shoots of such as have made growths. Dahlias for propagation may be potted—or the roots placed on a moderately warm tan bed, covering the roots with light earth, so that the crowns stand bare above the surface.

If your hot-beds have become chilled by the cold weather, a lining of warm stable manure, about two feet thick, should be placed all around them, but previous to building this, horizontal holes ought to be made into the bed with a round stick, so that the heat from the lining may the more readily penetrate and warm up the whole; during the month, Rose bushes and shrubs ought to be pruned, and the borders loosened with a strong fork, which is much better than a spade. When this work is completed, a good top dressing of woods earth or well rotted stable manure should be applied as a mulch. If your lawns were not top-dressed in the fall, it may yet be done with advantage—old manure is good, but wood ashes or lime would be better. Where moss has begun to interfere with the grass, a few weeks after the dressing has been applied, the whole surface should be gone over with a strong rake, and this should be followed by the roller. Pare the grass edgings, clean and surface such walks as want it with fresh gravel. Have your hedges cut during wet weather, and push all such work forward as soon as possible, so as not to interfere with the planting season.

### Beautify your Homes with Flowers.

J. WESLEY JONES, of Chatham Four Corners, Columbia Co. New York, has sent us his catalogue of choice flower and garden seeds, which we have thoroughly examined. Mr. Jones though comparatively, a young gardener in many of his new varieties far outstrips those who have been long and favorably known. Numerous novelties of the highest merit have been added to his list, most of them from the finest European florists and not before flowered in this country. His seeds are fresh and will therefore germinate and send forth their most brilliant floral beauties. The whole human race loves flowers, either in the savage or civilized state, and the following conveys an allegorical idea of the charm they shed upon the human mind:

**WORSHIP GOD WITH FLOWERS.**—Flowers are the memories of childhood, which accompany us from the cradle to the grave. I left my birth place at the age of seventeen, yet the peonies, tulips and roses of my mother's garden are pictured in my mind with a vernal freshness. Teach your children to love flowers, and they will love home and all its inmates. Beautify the grounds around your dwelling with rich foliage, plants, and the bright blossoms of sweet flowers, and the faces of all who look upon the scene will be lighted with smiles, while their hearts will perfect gifts to man. If I could be the means of creating a general taste for gardening and love of flowers, I should feel as though I had been of more benefit to my country than all the military heroes of the present age. Worship God with flowers. As He loves all that is beautiful and good, so will He love you as you make your home lovely.

### Our Homes—Every Man's duty.

Whoever has a permanent home should improve it, by planting fruit trees, grape vines, flowers and shrubbery. Nothing is more pleasant than to sit under one's "own vine and fig tree." Fruit and flowers bring happiness to the domestic circle, and as the season is near at hand for making selections, we would advise buyers to visit the Nursery of Mr. WILLIAM ADAIR and examine his fine stock, comprising choice varieties of both useful and ornamental trees and plants. It is safer than to buy of travelling agents who often impose upon you by showing fine pictures and then sending miserable specimens. Whatever is got of our *home* nurseries has the two-fold advantage of acclimation and adaptation to this soil, a fact that ensures a strong growth and an early yield.

## TREES AND PLANTS.

A Large and general assortment of the most reliable varieties of

 **Fruit and Ornamental Trees,**  
suitable for our climate and soil is offered by the undersigned, viz:

Apples, Pears, Plums, Peaches, Quinces,  
Gooseberries, Currants, Raspberries, Blackberries, Strawberries.

## GRAPE VINES.

 Concord, Delaware, Diana,  
Hartford Prolific, Union Village, To-Kalon,  
Rebecca, Rogers' Hybrids, 10 varieties,  
Adirondack, Ionia, Isabella, &c.  
also 20 of the **Best Foreign Varieties** for cultivation  
under Glass.

## ORNAMENTAL TREES.

Horse Chestnuts, Mountain Ash, European Linden, Silver Maple, Elms, Tulip Tree, Double Flowering Plum, Weeping Ash and others. **Evergreens**—Norway Spruce, Balsam, Hemlock, Fir, Black and White Spruce, Pines, Arbor Vitae, Juniper, &c., of *Large Size and Fine Specimens*.

## ROSES.

Hybrid Perpetual, Moss, Climbing, Bourbon, Tea, Noisette, &c., **A VERY LARGE STOCK**.

 **Green House and Bedding Plants,**  
of all the most popular kinds—VERBENAS, several thousand now ready. Peonies, Dahlias, Gladiolus, Tube Roses, Dicentra, and other Bulbs. In fact, **EVERY THING IN THE LINE** can be furnished of **GOOD QUALITY** and at moderate rates. Address,

**WM. ADAIR, Detroit, Mich.**

**DETROIT LIVE STOCK MARKET.**

BEEVES.—First quality and very extra	\$6 00@6 00 per cwt.
Ordinary	4 25@4 75
Common	3 50@4 00
Inferior	2 50@3 25

SHEEP—Active at \$5 50@6 00 per cwt.

CALVES—in demand at \$5 50@6 00 per head, as to quality.

**ALBANY LIVE STOCK MARKET.**

BEEVES.—The sellers are less cheerful. Flushed by the success that marked their operations for a month back, many bought largely in Buffalo, at the Bridge, and in Chicago, never anticipating a lull in the demand here; but they have been disappointed. At the opening of the market they asked last week's prices, but there were no buyers on those terms. The New Yorkers—those who had not already more than they wanted, bought by their agents in Chicago—held back. They were less liberal than usual in conceding weights; found fault with the average quality, and predicted a heavy supply. And they were right—the total receipts over the Central being 4,600 at least 4,000 of which were beef cattle. Holders came down  $\frac{1}{2}$ c. per lb., but the commission was not sufficient, the New Yorkers having it pretty much their own way, as the Eastern men wanted comparatively few and knew that there would be enough left for them on Monday. Finally prices dropped another  $\frac{1}{2}$ c., and most of the sales were made at that decline. Business, however, was dull to the close, and less than 2,000 head changed hands. Many droves, consequently, go to New York, in first hands, and it is expected that the supply there will be too large, as there is no reason to hope that the Eastern men will take more than five or six hundred. Some dealers insist that they sold at a decline of 1c. per lb., live weight, as compared with last week's rates and it may be that they did but averaging all the transactions of which we have particulars, and taking quality into consideration, we are satisfied that the decline is not more than  $\frac{1}{2}$ c. per lb.

FREIGHTS—On Bees, Sheep and Hogs, from Buffalo to New York, 50c. per 100 lbs. State cattle, from Albany to New York, by rail road, \$25 per car load. From Albany to Brighton, \$30 per car on Western, and \$45 per car on State Cattle.

RECEIPTS—The following is our comparative statement of receipts at this market over the Central Railroad, estimating sixteen to the car:—

	Cor. week	This week.	Last week.	last year.
Beeves.....	8,749	8,800	8,868	
Sheep.....	6,490	8,200	2,049	
Hogs.....				
Average weekly receipts last y'r.		Total since January 1.	Total same date last y'r.	
Beeves.....	8,749	38,120	88,316	
Sheep.....	4,422	59,25	54,850	
Hogs.....				

The cattle in the different Yards are from the several States and Canada in the following numbers:—

New York.....	556 Indiana.....	208
Illinois.....	1,677 Iowa.....	36
Michigan.....	605 Canada.....	168
Ohio.....	261 Kentucky.....	116

PRICES—	This week.	Last week.
Premium [P 100 lbs.]	\$8 00@8 50	\$8 25@9 00
Extra	7 20@7 50	7 40@7 80
First quality	6 20@6 50	6 40@7 15
Second quality	5 20@5 75	5 60@6 20
Third quality	4 20@4 00	4 60@5 10

SHEEP—The demand is good, especially on the part of the Albany Butchers, and the receipts being less by about 2000 head, than last week, the market is comparatively firm. We quote a few of the sales:—

35 premium State at 10 $\frac{1}{2}$ c. per lb., average	175 lbs.
450 fine wool State at 7 $\frac{1}{2}$ c. " "	102 "
120 " " 7 $\frac{1}{2}$ c. " "	30 "
140 " " 7 $\frac{1}{2}$ c. " "	98 "
171 " " 7 $\frac{1}{2}$ c. " "	94 "
225 coarse wool Ky., 5 $\frac{1}{2}$ c. " "	196 $\frac{1}{2}$ "

HOGS—Receipts light, and but few sales making here. Prices for Western corn-fed range from 7 $\frac{1}{2}$ c. to 8 $\frac{1}{2}$ c. per lb. for light to extra heavy.—*Albany Evening Journal.*

**WOOL MARKET.**

March is the month which we have held throughout our advices upon wool, would be the turning point of this great staple, and such it is apparently proving itself. In July 1863, the hue and cry was set up by speculators that farmers would have to sell their wool for 45@55 cents, and that they would not be able to obtain over 60c. for the finest kinds at any time before the coming in of the new clip for 1864. In this they were assisted by a large number of influential newspapers throughout the country, and such was the fear on the part of some producers that they actually let their stock slip off at a loss of 25 per cent. We thought at that time that it was only a trick of buyers to secure wool for less than it was worth, (and such it proved itself,) and advised them to "hold on" as it would bring 75 cents, before the season was over, maintaining that this was a fair price for good wool. All know how truthful were our predictions seven months since upon this point—wool during November and December, 1863, and January, 1864, reached up to 80 cents per pound in this State, standing generally at 75 cents. The bulk of wool was closed off at this paying price, others who wish to make the "last cent" have kept their wool still in store till this time, and what will be the result of too much tenacity for a higher price remains for time to develop. At present there is an inclination downward of 2@3c per lb., this is in a great measure owing no doubt to the following state of the cotton and wool receipts in New York:

Cotton bales received from Jan. 1 to March 1864	71 239
" " " 1863	50 020
Excess over 1863.	
Wool bales, domestic from Jan. 1 to March 1864	
" " foreign	

Total number of bales for 1864. 54 830  
Total number of bales, same time for 1863, 11 060

Excess of 1864 over 1863, 43 770  
Total excess of Cotton and Wool, baled for 1864, 64 998

If these bales averaged 250 lbs. each, 16,245,000 lbs.

With this enormous amount of raw material for manufactured fabrics in market over the first ten weeks of 1863, it is not to be expected that Cotton or Wool will hold as high this year as last, as it gives purchasers and manufacturers a large stock to select from as their wants demand, while it makes holders more anxious to sell. This with warm weather effects wool generally, and if a still larger supply of Cotton can be had for summer clothing the new clip will commence pretty well down on the present ruling rates.

**NEW YORK MARKET.**

The market is dull although the downward movement in prices seems to be checked. Several cargoes of South American Wool have been sold to arrive, and the demand is quite steady. Small sales of Pulled at 65c. a 73c.; and Fleece, 70c a 77c; Cape 35c. a 38c. Boston and Philadelphia same rates.

Price

Pure bl

Mixed bl

Canada

72 cent

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Oats,

Rye,

Barley,

Potato

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Apples,

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Seed, cl

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Beans,

Onions,

Turnip

Cider, ♀

Butter,

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Beef, ba

Mutton

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Sheep

Wool

Canada

Chicken

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Hay

Cheese

Corn

Coarse

Salt,

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Lard,

Maple

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## Prices in Detroit range as follows:

Pure blood Merino, extra clean	70@72c.
Mixed blood Merino, good order	65@68c.
Canada long clean fleece	55@60c.

Prices throughout Michigan range from 60 to 72 cents per lb., according to quality and condition.—W. S. B.

DETROIT MARKET PRICES,  
Ending March, 21st, 1864.

Carefully corrected just before going to press, by

C. L. CROSBY & CO.,

Commission Merchants and Dealers in Fruits, and Western Produce generally. No 169, Woodward Avenue, Detroit, Mich.

White Wheat, 1 bush.	advanced and firm	\$ 1 45@1 50
Red Wheat do	do do	1 30@1 36
Corn, Shelled, do	declined	0 95@1 00
do in the ear, do	do do	0 80@0 85
Oats, do	do	0 64@0 67
Rye, do	unchanged	1 00@1 10
Barley, new, 1 cwt.	advanced	2 75@2 85
Potatoes, Neshannocks, 1 bush.	do	0 85@0 90
do common	do unchanged	0 70@0 75
Apples, 1 bbl. winter fruit	advanced	2 25@2 60
do dried 1 bush.	do	1 88@1 90
Seed, clover do	declined	7 50@3 00
do timothy do	unchanged	3 00@3 25
Beans, do	declined	2 00@2 30
Onions, do	unchanged scarce & wanted	1 25@1 37
Turnips, do	no sale	0 25@0 30
Cider, 1 bbl.	advanced (rectified)	5 00@5 50
Butter, fresh roll, 1 lb.	advanced and scarce	0 80@0 82
do firkin, do	do	0 25@0 31
Venison, do	none in market out of season	0 05@0 10
Eggs, 1 doz.	advanced and scarce	0 20@0 21
Fowl, best dressed, 1 cwt.	do	8 50@9 00
do 1 bbl.	do	21 00@22 00
Beef, best dressed, 1 lb.	do	5 00@6 00
Mutton, dressed, 1 lb.	unchanged	0 07@0 08
do live, do	do	0 05@0 06
Hides, green, do	do	0 05@1 06
do dry, do	do	0 15@0 16
do green calf do	do	0 15@0 16
do dry do	do	0 25@0 30
Sheep Skins each	do	1 75@2 75
Wool fine grade, 1 lb.	declined	0 65@0 72
Canada coarse clean fleece	do	0 50@0 60
Chickens dressed per pair adhd high prices & scarce	0 75@1 00	
do live, 1 pair	do	0 50@0 75
Hay, 1 ton new and old	declined	18 00@20 00
Cheese, 1 lb.	advanced	0 14@0 16
Corn Meal, 1 cwt.	unchanged	2 00@2 75
Coarse middlings, 1 ton	advanced	24 00@26 00
Salt, 1 bbl.	declined	2 00@2 15
Flour, do	unchanged	6 50@7 50
do buck wheat, 1 cwt.	declined and dull	2 50@2 75
Lard, 1 lb.	advanced	0 18@0 18½
Maple Sugar, 1 lb.	fair supply	0 14@0 18
do Syrup, 1 gal.	wanted	1 00@1 25

WOOD—Unchanged—Good Hickory, \$5.00 a 5.50. Beech and

Maple \$4.50 a 5.00; mixed Wood Beech, Ash, &c., at \$4.00 a 4.50.

Green ranges from 20 to 30 cents lower than well-seasoned or dry.

BUTTER—This market has not been so bare of good samples for years, and many persons are making enquiries for good Table Butter. The consequence is that it will bring a good price for well made nice table butter for some time to come. Many of our butter makers are to careless of the manner in which they prepare and bring their butter to this market, a little more care should be taken in quality and order to ensure a good price. Farmers should put roll butter in clean wet cloths, the cloths could be used many times and save expense of new ones.

## NEW YORK MARKET.

Compiled for the Farmer from the latest New York advices to the date of going to Press.

FLOUR—State and West. dn l and heavy, at \$6.00a\$6.50 for supers; \$6.65a\$6.80 for extra State; \$6.85a\$7. for choice do. \$1.10a\$1.25 for round hoop Ohio; and \$1.10a\$8.50 for medium to choice grades of Western extra trade and family brands; and \$6.75a\$7 for common.

Southern Flour was firm, with a brisk demand in low grades to fill contracts with government. Sales 4,800 bbls. at \$7.20a \$7.80 for supers; \$7.85a\$8.75 for fancy and extra; and \$9a\$10.50 for choice family brands.

Canada Flour was quiet. Sales 400 bbls. at \$6.75 a \$8.25 for common to choice extras. An advance on best grades of 50c. and \$1.00 throughout.

WHEAT—was scarce and firm, but with a demand much reduced. Quotations nominal, at \$1.60a\$1.66 for Spring; \$1.63 a\$1.72 for Red Winter; \$1.78a\$1.76 for amber do. The sales were limited to a cargo of inferior Spring at \$1.58; one of inferior red Winter at \$1.60; part of a cargo of amber Iowa, \$1.66; and a parcel of white Kentucky at \$1.90. Advance of 50c for Western since February.

CORN—is firm but inactive, at \$1.82a\$1.85 for Western mixed in store and afloat; by auction, 14,000 bush. prime Western mixed, in store, sold at \$1.80a\$1.81 Advance of 50c over Feb. quotation.

OATS—was dull at 89c. for State and Western. Slightly declined 1a3c. RYE—very quiet, at \$1.25a\$1.30. BARLEY—\$1.38a\$1.52, as in quality.

BEANS—The market for Beans is not materially changed. Receipts are moderate, and the stock on hand is being steadily worked up. Choice clean Beans are in fair demand. We quote. \$2.90a\$3.00 for Marrowfats; prime Kidneys, \$2.90a\$3; and \$2.65a\$2.75 for prime Mediums; mixed lots of Beans, \$1.5c a \$2.40; Pea Beans, \$2.50a\$2.85 per bushel. SPLIT PEAS—\$1.70a\$1.72.—Farmers should plant more.

APPLES—firm demand. Western Greenings, \$2a\$3 per bbl.; Rhode Island do., \$2.50 a \$3; Newtown Pippins, \$2.50 a \$3.50; Baldwin, \$2 a \$2.50; Spitzberg, \$2.50 a \$4; Pound Sweeting, \$1.50 a \$2; Golden Russet, \$2 a \$2.50.

PORK—was quiet, but firm. Sales 1700 bbls. at \$23.75 for new Mess, \$22 a \$22.50 for old Mess, \$18.50 a \$20.50 for Prime, old and new, and \$22 a \$22.50 for Western Prime Mess. Advance on Western of 50c a 100 since Feb.; city dressed Western and State do., 11c.a11½c.

LARD—was dull and heavy. Sales 900 bbls. and tcs. at 18% a18½c for No. 1. to Prime, new. Unchanged.

BEEF—was firm and in demand, at \$5a\$6 for country prime, \$7.60a\$8.50 for country Mess, \$12a\$15 for repacked Western Mess, and \$15a\$17 for extra. Tierce Beef firm, at \$25 for Western prime Mess, and \$29a\$30 for India Mess.

BUTTER—scarce and firm at 28c.a33c. for Ohio, and Western and 32c.a38c. for State.

CHEESE—quiet at 14c.a15c. for Ohio, and Western, 15½c. a16½c for State, and 16½c.a17c. for factory make.

REMARKS.—Flour advanced on best grades—Wheat scarce and advanced—Corn firm and advanced—Oats declined—Apples firm—Western Pork advanced—Beef firm and in demand—Butter scarce and advanced—Lard and Cheese quiet and unchanged.

FARMERS GET MACHINERY.—In this age of war and of the scarcity of human labor, there is much inquiry for the best machinery to make up the deficiency. Farmers, let us give you a word of advice, if you want to get in your crops this season you must order machinery and get it early as you cannot get men even for love nor money, as the manual strength of the country is fast being drained off by the repeated calls for troops. Among the best pieces of mechanism possessing a very light draught is the *Quaker Mower and Reap*, manufactured by TABERS & CO., Salem, Ohio, which took the Silver Medal as a first premium at our State Fair for 1863.

We have received a fine testimonial of "Fiddard's Cattle Powder," from a Michigan farmer.

**Experiments with Manures and Wheat Culture.**

Mr. Lawes, a celebrated English agriculturist, says the Canada Farmer, has recently made public the results of certain experiments tried by him in growing wheat year after year on the same land, with various kinds of manure, and without manure of any kind. Fifteen acres were set apart in 1843 for the purpose of these experiments. The field was divided into different plots. One plot was sown without manure of any kind, and the others were dressed with various artificial fertilizers, *e. g.*, superphosphate and salts of potash, soda, and magnesia, salts of ammonia, &c., ashes of plants, &c., while one plot was treated to 14 tons of barn-yard manure per acre, in addition to the mineral appliances.

**Result:**—1. The twentieth crop, just harvested, is the heaviest yet produced.

2. The plot which has been sown to wheat annually for 20 years without manure of any kind, but thoroughly tilled, has averaged 16 1-2 bushels per acre.

3. The plot which has been dressed with mineral manure has averaged 18 1-4 bushels per acre, or only two bushels more than the unmanured plot.

4. The plot which received in addition to the mineral fertilizers a supply of barn-yard manure, has yielded on an average 34 3-4 bushels per acre. In some favorable seasons, the increase from the use of barn-yard manure was much greater than the average yield; once, when an extra quantity of dung was used, and the season was unusually favorable, the yield was 55 bushels per acre.

**Lessons:**—1. Tillage is manure. The word "manure" signifies "hand labour." To stir the soil, letting in air, moisture, sunshine, &c., is to manure it.

2. Thorough cultivation pays. The average yield on the unmanured plot sown year after year to the same crops well hoed, weeded, and pulverized, exceeds the average yield of land in Canada, with advantages of manure, change of crops, &c.

3. Mineral fertilizers are chiefly valuable from their combining with other elements such as common dung supplies. By liberating the ammonia especially, and bringing it into direct contact with the plant, they increase the crop.

4. Barn-yard manure made of as rich material as possible, well taken care of, and liberally applied, is the grand means to be employed for maintaining and increasing the fertility of land.

We should have liked to know the effect of barn-yard manure without mineral fertilizers, but this, from the account we have seen, seems not to have been tried. The above lessons are of the highest value, and cannot be too often called to mind by the farmer.

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WILL NOT INJURE the most delicate animal.

Kills TICKS on Sheep.

Cures SCAB on Sheep.

Kills VERMIN on Animals and Birds.

Cures all SKIN DISEASES on Animals.

Kills BUGS on Roses, LICE on House Plants.

Kills CANKER WORM on Apple Trees.

Kills BED-BUGS and WATER-ROACHES.

Kills all VERMIN that infest Grape and Cranberry vines.

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One Pound of this Extract will make TEN Gallons of Wash.

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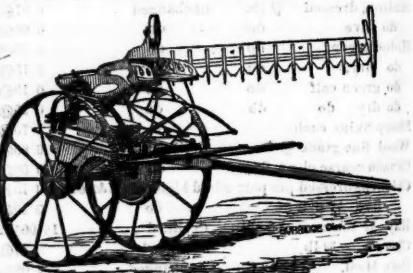
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PEONIES, Chinese Herbaceous, 40 of the finest sorts.

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PERPETUAL or MONTHLY CARNATIONS—A large and superb collection.

HARDY HERBACEOUS FLOWERING PLANTS, upward of 300 species and varieties.

GLADIOLUS, the finest now and old sorts.

GREEN HOUSE and BEDDING OUT PLANTS in great variety. The entire stock is in perfect order; owing to the unusual mildness of the winter, the most delicate trees have escaped injury.

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### ROE'S PATENT CUT-OFF VALVES.

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Several thousands of them have been sold and their reputation is well known throughout the dairying sections of the country.

The manufacturing of dairying apparatus being our exclusive business, we are enabled to make a better study of the interest of the dairymen and make such improvements in dairying apparatus as the improved interests of dairying demand—and we believe we are not claiming too much in saying, that the improvement in the quality of Cheese, and the general interests of dairying within the last few years, is largely owing to the introduction of our Cheese Vat. This embraces everything wanted, up to the present time, for cooling and heating the milk; scalding the curd; regulating the heat; supplying the hot water; a measure to show the number of gallons of milk in the Vat, &c., &c., and everything made and finished in a superior manner, and is from \$5 to \$10 cheaper than any other Vat.

### VATS FOR CHEESE FACTORIES

We are making very large Vats, with large heaters, cut-off, and all the improvements complete, for Cheese Factories of 100 to 1000 cows; also a superior style of carrying cans and all apparatus needed for Factory use.

We also manufacture and furnish *CHEESE PRESSES AND PRESS SCREWS*, for common or factory use.

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The best hoop in use. Curd Knives; Scale Boards for packing Cheese, &c., &c. Send for a Circular or address

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I WILL take a partner on my farm, one to manage out door matters or in. This is a good chance for a man with a family; he can stock the Farm all in or part and work it on shares, 120 acres, half improved. It is also a good chance for a family of the gentler sex, who has a little means, and will manage indoor matters. One within the prime of life; she will be taken for better, better, better, but don't send one for worse.

Address "PARTNER," put in another envelope, and addressed to **BOND & SNYDER, Detroit, Mich.**

**Sowing Grass Seed.**

In partially fulfilling the request of the Club, on the subject of sowing grass seed, I shall simply speak of the preparation of ground, time and manner of sowing, kind and quantity of seed.

The preparation of the ground is a vital necessity to a successful crop of grass. In newly cleared land there is but little difficulty in having seed take well; but at present, the great call for new seeding is where meadows have "run out," and it becomes necessary to break them up, take off two or three crops and reseed.

The hay crop fails because the land needs renovating; and a our dairy farmers are well supplied with manure, let us try this process. In the fall, or if it cannot be done in the fall, in the winter, or early spring, give the land that is designed to be plowed a good surface manuring, and we might suggest, a sprinkling of plaster, after the manure is spread; then, at a proper time, turn this over, or rather turn the manure under, by as neat ploughing as the land will admit, and plant the same with such hood crops as may be desired. If the ground is in good heart, by fall ploughing it will be in good condition for another hood crop; and by the third year, it will be in good tilth (especially if plowed in the fall) for a sowed crop and seed-ing.

If a machine is used, then of course it will be sowed as the machine sows it, and there are those that do the work well, and save a great many steps and a great many motions of the arms; but whether by machine or by hand, it is desirable to sow as early as the ground will admit. I refer to sowing in the spring, because there is so little winter grain sowed in this section of this State.

When the grain is sowed and harrowed thoroughly, the ground may be bushed over to advantage, as it gives the seed a light covering and smooths the ground, I find a convenient time to sow is, when the ground is harrowed nearly enough to follow the harrow and sow the seed, and then bush it in. If a top-dressing of well rotted manure can be given previous to harrowing, a good account will be given in return.

A heavy crop of oats is liable to smother the grass if it lodges; otherwise, there seems to be but little difficulty in seeding with oats, and they do well to be sowed early. So with barley; but wheat is sowed too late, if sowed as late as many advise, to insure a good catch of grass; for frequently we have a dry spell, that sorely pinches the young blades. Of all the kinds of grass that are raised in Herkimer county, herds grass is the real "stand by" for upland. The quantity, as usually recommended, is eight or ten quarts to the acre, but my own scanty experience satisfies me that this is not enough—the grass stands too thin, and, of course, too much in clumps. The present year I have seeded six acres, with sixteen quarts to the acre, and had the approbation of one of our best farmers; the seed took finely, but suffered in consequence of the lodging of the grain.

Red clover is frequently mixed with herds grass, to insure a good crop the first year; but it can never make a desirable crop of hay till we find some better way of curing it. When hay stools and hay caps come into use, it may do to raise clover. Red-top comes in, naturally, on rich, moist land, as does white clover on our dry land.

The man who wishes to keep his land clear from foul seed-ing, will be the safest by raising his own seed. For pasture land, a greater variety of grass seed is good economy; and a good share of clover seed would be advisable. When so much land is devoted to the pasture and meadow, success in seeding is an important item in farming.—S. S. WHITMAN, in *Transactions of Little Falls Farmers' Club.*

"**VOICE OF THE WEST AND SECOND ADVENT PIONEER.**"—This is the title of a new paper recently issued at Buchanan, in this State, and published by Elder JOSHUA V. HINES. It is a neatly printed and able advocate of "*Adventism*," it says;

"The times are eventful, and full of interest, especially to the student of prophecy. The judgments of God are falling upon the world, and the statesman, the politician and the watch-man are all enquiring, "What do these things mean?" Soon Christ will come, and the destiny of the world will be decided."

## THE OAKLAND COUNTY Farmers' Mutual Ins. Comp. *Of Oxford, Chartered June 19, 1862.*

**CAPITAL, - - - - - \$50,000.**

**L. SURPLUS, - - - - - \$2588 67.**

THIS Company, unlike any other Farmers' Insurance Company, is restricted by its Charter to the insurance of private dwellings and the usual outbuildings connected with them and their contents.

Owners of this class of property, especially the farming community desirous of insuring, must at once see the great advantages afforded them by a Company organized on this plan; it being wholly exempt from the heavy losses sustained by companies that include in their risks manufactures, mills, taverns stores, and other like hazardous property.

The Directors offer the following summary of their plan of operations:

1st. Risks will be taken only on private dwelling houses and the usual out-buildings connected with them and their contents.

2nd. No more than two thirds the value of any building insured.

3d. Personal property insured at its full cash value.

4th. No application for a longer term accepted than three years.

C. K. CARPENTER, WM. H. FULLER, NOAH TYLER, F. W. FIFIELD,	A. A. STANTON, LANSOON PREDMORE, L. G. TANNER, Directors.
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## THE CULTIVATION of the CRANBERRY

I much more easy and successful in the common dry soil of private gardens, Market Gardens, or in field culture, than in the usual clumsy way in bogs and meadows. The yield this season by my method of culture was over 400 bushels per acre. Explicit directions for cultivation, with price of CRANBERRY PLANTS, and all other *Useful and Ornamental Tree, Plants and Shrubs*, will be sent by mail. B. M. WATSON,  
Feb 23 Old Colony Nurseries, PLYMOUTH, Mass.

We have received *Godey's Lady Book*, *Arthurs Home Magazine*, *Frank Leslie's* and the *Atlantic Monthly* for January and February, they are teeming with variety. For sale by Boys, Newsdealer.

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**TO FARMERS AND STOCK BREEDERS**  
ALL HAIL THE TRIUMPH THAT

## Fickhardt's Cattle Powder

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ACHIEVED!!

THOUSANDS ARE TESTIFYING TO ITS EFFICACY!

"The merciful Man is kind to his Beast."

AFTER years of study and experiment by the inventor to a compound from pure Vegetable materials a Powder that should and must take the place of the thousand and one nostrums gotten up and palmed upon the public as "certain remedies" for the cure of all diseases which the brute creation are "help" for, he has produced the one heading this advertisement, and none can be genuine unless bearing our FAC SIMILE signature. The demand has been such that its sale has been chiefly confined to the State of Pennsylvania, but we have now consummated such arrangements that we are prepared to supply the numerous orders now on hand, as well as those we may hereafter receive from other States of the Union.

Knowing this Powder to possess all the curative properties here set forth we deem a fulsome tirade of words unnecessary, seeing assured that its own merits will secure for it a ready sale. Being composed of pure vegetable ingredients, it can be safely and judiciously given to that noble animal the HORSE. It effects are no false pampering of the system, creating a bloated carcass with a premature shedding of the hair; but on the other hand, it strengthens the digestion, purifies the blood, regulates the urinary organs, thereby improving and protecting the whole physical condition of the animal even when in an apparently healthy state.

To the Agriculturist and Dairymen it is an invaluable remedy for their NEAT CATTLE laboring under HOOF diseases.—HOLLOW HORN, and other of the many complaints to which they are liable from a suppression of the natural secretions.

MILCH COWS are much benefitted by occasionally mixing with their slop or feed—it has a tendency to strengthen the animal, remove all obstructions from the milk tubes, promote all the secretions, and consequently adding much the health of the animal, and quantity and quality to the Milk, Cream & Butter.

HOGS, during the warm weather are constantly overheating themselves, which results in their getting Coughs, Ulcers of the LUNGS and other parts, which has a natural tendency to retard their growth. In all such cases a teaspoonful mixed in a bucket of feed and given every other day will speedily remove all difficulties, and the animal will soon increase in both Health and FAT.

### TESTIMONIALS.

WASHINGTON, Jan. 7, 1863.

To William Ralston:

I have used your Cattle Powder, and would state that it possesses the qualities of toning and renovating the stomach, removing some morbid matter. I can recommend it for all horses in private use, where the system is not too much debilitated.

J. P. TURNER, Veterinary Surgeon,  
For the United States Government,  
Washington, D. C.

WASHINGTON, Oct. 16, 1862.

Wm. Ralston:

Dear Sir—Having tried the Catt'le Powder, manufactured by you, I consider it a good article for the diseases of Horses, and a good a preparation as there is in the mark st.

HIRAM WRIGHT, Asst. Veterinary Surgeon,  
For the United States Government.

WASHINGTON, Oct. 21st, 1863.

Wm. Ralston:

Dear Sir,—Having had your Horse and Cattle Powder in use for some time, I most cheerfully recommend it as a good article and well worthy of public notice.

M. JACKSON,  
Superintendent of the Mule Corral.

Wm. Ralston:

We have tried the Horse Powders manufactured by you, in the Corral and Hospital stables to some extent. It is highly recommended to me by the Superintendent and Veterinary Surgeon in charge.

C. M. SNOW, Gen'l Sup't.,  
Ass't Quartermaster's Office, cor. G and 22d st.,  
Washington D. C.

EPSOM, Baltimore Co., Md., May 20th, 1853.

The undersigned, for some time past, has had in use on his farm, "Fickhardt's Cattle Powder," and from the beneficial effects derived from it, takes pleasure in recommending the article to all Farmers, as a valuable preparation, to be given to Horses and Cattle. Some of my best work horses, that were

or bad health, with little or no disposition for food, on their taking "Fickhardt's Cattle Powder," soon recovered their appetite, and in a short time became fat and in a short time became fat and in good condition.

HENRY B. CHEW.

PHILADELPHIA, May 15, 1855.

Wm. Ralston, Esq.:

Dear Sir—It is with pleasure that I certify to the invaluable properties of your Cattle Powder. I have been using it for nearly eight months. In last June I was traveling, my horse became very sick, so bad that I had to return home, and apply to a Farrier. It was nearly ten months before he was fit to use, he being in such a low condition. I happened to stop in at Mr. W. White's, and saw your Cattle Powder. I made up my mind to try a package, and after using two of them, it was surprising to every one who saw the horse, to see how much he had improved in flesh and spirit. Those who had seen him before he became sick could scarcely believe him to be same. I also recommend the Powders as being a fine thing for the urine, and also to improve the coat, as it gives it a fine, silky appearance. My friends seeing the advantage of it, have commenced using it among their Cattle. No person should be without in their stables. I have seen it fully tested, and consider it one of the best articles in use.

Yours very respectfully,

GEORGE SNYDER.

We, the undersigned, have used your Powder, at the request of our friend, George Snyder, and find it very useful among our cattle.

PETER OTT,

JACOB OTT,

J. G. KEISS,

Lower Merion, Montgomery county, Penn.

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### SALMEN WANTED.

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Septmber 64

### SOUTH DOWN BUCKS AND SUFFOLK PIGS.

THE subscriber has for sale several South Down Yearlings and Buck Lambs. The yearlings are by Tetherby 8d Tetherby, imported by Mr. Morris, of Mountfordham. The Buck Lambs are by Young York, grandsons of York, also imported by Mr. Morris.

Also, several pairs of Suffolk Pigs, from Stickney's Importation. The above stock is at the Spring Brook Farm, near the village of Farmington, Oakland county.

Address, F. E. ELDRED,  
September, 1862.  
Detroit, Mich.

J. WESLEY JONES'  
CHOICE  
**FLOWER and GARDEN SEEDS**

## INCLUDING THE NOVELTIES OF THE SEASON FOR 1864.

## **NEW AND CHOICE VARIETIES OF VEGETABLE SEEDS.**

I include in this list only such as are new and valuable and not readily obtained. The most of them I have received from the celebrated English firm of Carter & Co., London, and they can be confidently recommended, including a few American novelties of great merit.

MOORE'S VEGETABLE CREAM SQUASH.—An improved small cream colored oval shaped variety of vegetable marrow, of an extremely delicate flavor. The seed was presented by Thomas Moore, Esq., Sec'y, to the floral committee of the Royal Horticultural Society of London, and in a communication he speaks of it as follows: "I have grown it for 8 or 10 years, and have always thought it to be the best flavored of all sorts I have tested." Per pkg. 25

**ADVANCER PEA**—A dwarf green wrinkled marrow of fine flavor, long pods, well filled up, and podding well up the haulm; very prolific, and nearly as early as Daniel O'Rourke. "The best wrinkled marrow in cultivation."—*Gardeners' Chronicle*. 25 pgs.

**CAETER'S CHAMPION EARLY FORCING POTATO.**—The earliest flame potato in cultivation, described by the "Gardeners' Chronicle" as "a kidney potato the earliest yet introduced." Orders for this potato will be filled in April as soon as all fear of frost is passed, by mail, post-paid, and as

my stock is small, orders should be sent early. Per tuber. 25  
**SUTTON'S STUDENT PARSNIP**—This was originated by Prof. Buckman, of the Royal Agricultural College, Cirencester, from wild parsnip, and will be found a great acquisition. Per pkg. 15

**HOOD'S IMPERIAL DWARF RED CELERY**—A stont-growing, very compact, solid and hardy variety of superior flavor.

CARTER'S ST. OSYTH BEET—Medium size, good shape, short top, rich deep blood red color, fine flavor, decidedly the best beet in cultivation. I grew this the past year

and found it equal to the recommendation. Per pkg. 25  
**HENDERSON'S PINE APPLE BEET**—Compact, short top,  
roots medium sized and of a deep crimson, good flavor. Per  
Pkg.

Pkg. 10  
LITTLE PIXIE CABBAGE—Very early, small, delicate fla-

**WHITE JAPANESE MELON**—This is the finest flavored thin-skinned musk melon yet introduced. The seed is from Japan. No Lover of this fine fruit should fail to try this variety. 25

## **FLOWER SEEDS BY MAIL.**

**Flower Seeds,** from their compactness and light weight, can be safely and speedily transported by mail to any part of the country, thereby giving those who live remote from the larger towns and cities, where they can be procured, nearly an equal chance with those living in them, for procuring at a moderate rate, all the choice and rare varieties. For the accomplishment of this purpose, we offer the following collections, comprising the most beautiful and showy Annuals, Biennials, and Perennials, which will be sent by mail free of postage, to any part of the United States, at the following prices:

part of the United States, at the following prices:	
12 ex. fine var., Truff. new peony-flow'd.	\$1 25
24 selected	2 50
6 splendid	1 00
6 finest	75
10 beautiful	1 00
10 splendid	1 50
8 splendid var. Reid's new Quilled	75
4 finest var. Double Corcadeau	50
12 ex. fine var. Pyramidal Boquet	1 00
12 superior var. Quilled	1 00
8 beautiful var. new Banunculus, flow'd.	75
4 very fine var. new Hedgehog.	40

In addition to these I put up a collection of *Aster* which I consider to be the finest ever sent out, it contains 10 packages of mixed colors of the following kinds, viz.: Truffaut's New Peony, Peony Perfection, Giant Emperor, Imbrique Pompon, German Quilled, Ranunculus, Hedge Hog, Reid's improved, La Suprba, and the beautiful new *Aster Splendens*. No one who delights to grow fine flowers, should fail to send for one of these packages. Price \$1.00

BALSAMS, 12 finest prize Balsams,	\$1 00
GEKMAN STOCKS, 12 superb new varieties, ten week large flowering,	1 00
" 8 beautiful new varieties, perpetual large flowering,	75
" 12 select prize var. Hollyhocks, English, from Downie, Laird and Laing's celebrated collec- tion saved from prize flowers	1 50
10 Finest var. Marigold	75
6 Newest " Marvel of Peru	40
5 Select " Nemophila,	25
12 Distinct " Ornamental Grass	1 00
12 " " Gourds	1 00
8 Beautiful" Phlox Drumondi	75
Finest Petunias	50
12 Splendid var. Pinka, Carnation	2 50
12 " " Picotee	2 50
8 Distinct " Portulacas	45
8 Finest " Sweet Peas	40
6 Splendid " Scrophularia long-flowered	50
6 Extra fine" Snapdragon	50
12 Selected " Salpiglossis	75
12 Superb " Wallflower, double	75
8 Sup. new " Cockscombs	75
9 Fines " Callopis	35
6 Selected " Climbing plants	50
20 " " including newest	2 00
8 Distinct " Delphinium	75
18 Finest, " Chinensis	75

## **THE EXTRA INDUCEMENTS.**

These will be put together and sent to one address, or in separate packages and mailed to the address of each individual forming the club, as may be desired. In all cases the postage will be *prepaid*. The same deduction will, of course, be made to any person ordering for himself alone.

I would again call attention to my selection of Asters, in collections, (for description see Catalogue,) which I think is the finest ever offered. I sell the collection at \$1.00, yet if selected separately from the Catalogue it amounts to \$1.45.

During the past two years, our collections of Flower Seeds by mail, have been sent to almost every State in the Union, and so far as we have learned, have given universal satisfaction, and it is our earnest endeavor to make these collections not only second to none, but to make them superior from any other establishment in the country.

N. B. Particular attention should be paid to giving *The Address, Town, County and State in full*. Catalogues will be sent to all applicants upon receipt of a three cent stamp. Address, **X. HERCULY JONES.**

J. WESLEY JONES,

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